Research on Social Interdependence

Learning together to complete assignments can profoundly affect students, teaching assistants, and professors. A great deal of research has compared the relative effects of cooperative, competitive, and individualistic efforts on instructional outcomes. Such research began in the late 1800s with a series of studies on the factors associated with competitive performance. The amount of research that has been conducted since is staggering. During the past 90 years, over 575 experimental and 100 correlational studies have been conducted by a wide variety of researchers in different decades with different age subjects, in different subject areas, and in different settings. The research program at the Cooperative Learning Center at the University of Minnesota over the past 25 years has conducted over 85 studies to refine the understanding of how cooperation works. Far more is known about the efficacy of cooperative learning than about lecturing, departmentalization, the use of technology, or almost any other facet of education.

Building on the theorizing of Kurt Lewin and Morton Deutsch, one can make the premise that the type of interdependence structured among students determines how they interact with each other, which in turn largely determines instructional outcomes. This section is organized around this progression from goal structures to patterns of interaction to outcomes. Structuring situations cooperatively results in promotive interaction, structuring situations competitively results in oppositional interaction, and structuring situations individualistically results in no interaction among students. The characteristics of these three types of social interdependence are summarized in table 2. These patterns of interaction affect numerous variables, which can be subsumed within three broad and interrelated outcomes: effort exerted to achieve, quality of relationships among participants, and participants’ psychological adjustment and social competence.

Patterns of Interaction

Two heads are better than one.

Simply placing students near each other and allowing them to interact does not mean that learning will be maximized, high-quality peer relationships will result, or students’ psychological adjustment, self-esteem, and social competencies will be enhanced. Students can obstruct as well as facilitate each other’s learning. Or they can ignore each other. The way students interact depends on how faculty members structure interdependence in learning.

Positive interdependence results in students’ promoting each other’s learning and achievement. Promotive interaction is defined as individuals encouraging and facilitating each other’s efforts to achieve, complete tasks, and produce to reach the group’s goals. While positive interdependence in and of itself might have some effect on outcomes, it is the face-to-face promotive interaction among individuals, fostered by the positive interdependence, that most powerfully influences efforts to achieve, caring and committed relationships, and psychological adjustment and social competence. Students focus on increasing their own achievement and on increasing the achievement of the other members of the group. Promotive interaction is characterized by individuals’:

1. Providing each other with efficient and effective assistance;
2. Exchanging needed resources, such as information and materials, and processing information more efficiently and effectively;
3. Providing each other with feedback to improve their subsequent performance of their assigned tasks and responsibilities;
4. Challenging each other’s conclusions and reasoning to promote higher-quality decision making and greater insight into the problems being considered;
5. Advocating the exertion of effort to achieve mutual goals;
6. Influencing each other’s efforts to achieve the group’s goals;
7. Being motivated to strive for mutual benefit;
8. Acting in trusting and trustworthy ways;
9. Exhibiting a moderate level of arousal characterized by low anxiety and stress

Negative interdependence typically results in students’ opposing and obstructing each other’s learning. Oppositional interaction occurs as students discourage and obstruct each other’s efforts to achieve. Students focus on increasing their own achievement and on preventing any classmate from achieving higher than they do. No interaction exists when students work independently without any interaction or interchange with each other. Students focus only on increasing their own achievement and ignore as irrelevant the efforts of others.

**Giving and receiving assistance**

Within most tasks, productivity is enhanced when individuals give each other relevant task-related help and assistance. Cooperative situations contain more consistent perceptions of more frequent helping and tutoring (including cross-ethnic and cross-handicap helping) than competitive or individualistic situations. In research on both social-psychological and applied behavior, cooperative structures have enhanced helping among group members, while competitive structures have resulted in individuals’ obstructing each other’s efforts to achieve, refusing to help and share, and engaging in antisocial behaviors. These effects of competition are exacerbated by losing. Observational studies of actual learning groups consistently find students giving and receiving more help in cooperative than in competitive or individualistic situations.

**Information exchange and cognitive processes**

More efficient and effective exchange and processing of information take place in cooperative than in competitive or individualistic situations. While a wide variety of resources might need to be exchanged to complete tasks and accomplish goals, the most common resource shared and exchanged within cooperative efforts is information.

Compared with competitive and individualistic situations, students working cooperatively:
1. Seek significantly more information from each other than do students working within a competitive goal structure;
2. Are less biased and have fewer misconceptions in comprehending the viewpoints and positions of other individuals;
3. More accurately communicate information by verbalizing ideas and information more frequently, attending to others’ statements more carefully, and accepting others’ ideas and information more frequently;
4. Are more confident about the value of their ideas;
5. Make optimal use of the information provided by other students.

In cooperative situations, students are bound together by their mutual fate, shared identity, and mutual causation, and they therefore celebrate (and feel benefited by) each other’s successes. Relevant ideas, information, conclusions, and resources tend to be made available, exchanged, and used in ways that promote collective and individual insights and increase energy to complete the task. Such oral discussion of relevant information has at least two dimensions - oral explanation and listening – and both benefit the giver and the receiver. The giver benefits from the cognitive organizing and processing, higher-level reasoning, insights, and personal commitment to achieving the group’s goals derived from orally explaining, elaborating, and summarizing information and teaching one’s knowledge to others. The receiver benefits from the opportunity to use others’ resources in accomplishing his or her goals.
Exchanging information and stimulating cognitive processes might not occur in competitive or individualistic situations. In competitive situations, the exchange of communication and information tends to be nonexistent or misleading, and competition biases a person’s perceptions and comprehension of others’ viewpoints and positions. Individualistic situations are usually deliberately structured to ensure that individuals do not communicate or exchange information at all.

Survey research indicates that fear of public speaking is quite common among the general population of adolescents and adults. College students in particular are frequently apprehensive about speaking in the classroom. Such anxiety, however, can be significantly reduced if students are given the opportunity to first express themselves in the more comfortable social context of a small group of peers. Students whose primary language is not English could especially find anxiety reduced by working in small groups in college classes.

**Peer feedback**
An important aspect of promotive interaction is the opportunity for group members to provide each other with feedback about how they are fulfilling their responsibilities and completing their work. Feedback is information made available to individuals that makes possible the comparison of actual performance with some standard of performance. Knowledge of results is information provided to the person about his or her performance on a given effort. It could be in the form of qualitative information in which the person is informed that a performance is either correct or incorrect. Or it could be quantitative information about how much discrepancy exists between the person’s response and the correct response. Usually, quantitative information (that is, process feedback) about the size of the discrepancy existing between actual performance and some standard of performance or how to improve one’s reasoning or performance promotes achievement more effectively than qualitative information (that is, terminal feedback) about being right or wrong or what the correct answer is. Receiving personalized feedback from another person increases performance to a greater extent than does receiving impersonal feedback; peer feedback from collaborators could be especially vivid and personalized. Frequent and immediate feedback increases a student’s motivation to learn.

**Challenge and controversy**
An important aspect of promotive interaction is controversy, the conflict that arises when involved group members have different information, perceptions, opinions, reasoning processes, theories, and conclusions and must reach agreement. When controversies arise, they can be dealt with constructively or destructively, depending on how they are managed and the level of interpersonal and small-group skills of the participants. When managed constructively, controversy promotes uncertainty about the correctness of one’s views, an active search for more information, a reconceptualization of one’s knowledge and conclusions, and consequently, greater mastery and retention of the material being discussed. Individuals working alone in competitive and individualistic situations do not have the opportunity for such a process, and their productivity, quality of decision making, and achievement therefore suffer.

**Public advocacy and commitment**
Promotive interaction includes advocating that cooperators increase their efforts to accomplish the group’s goals and publicly committing oneself to do the same. Commitment can be defined as the binding or pledging of the individual to an act or decision. To the extent that people act in the absence of coercion, commit themselves in front of others to act, or invest time, money, or personal prestige in an activity, they come to see themselves as believers in that sort of activity and develop a personal interest in it. Individuals become more committed to attitudes that are made public than to attitudes that remain private. People are particularly prone to increase their commitment to actions that they have attempted to persuade another to adopt.

**Mutual influence**
During the exchange of information, individuals share ideas and information and use each other’s resources to maximize their productivity and achievement. This process entails mutual influence in which cooperators consider each other’s ideas and conclusions and coordinate their efforts. Participants must be open to
influence attempts aimed at facilitating the accomplishment of shared goals, must trust each other not to use the resources being shared in detrimental ways, and must form emotional bonds that result in commitment to each other’s welfare and success. Influence can be exerted in three ways within social situations: direct influence, social modeling, and situational norms. Students will be receptive to others’ attempts to influence them directly to the extent that they perceive a cooperative relationship among goals attained. In cooperative situations, students benefit from the group’s modeling effective and committed behaviors, skills, and attitudes. Visible and credible models who demonstrate the recommended attitudes and behaviors and who directly discuss their importance are powerful influences. Finally, achievement is influenced by whether or not the group’s norms favor high performance. In cooperative situations, everyone benefits from the efforts of cooperators. Because it is in each student’s best interests to encourage the productivity of collaborators, the group’s norms support efforts to achieve. Furthermore, evidence suggests that in the generally competitive climate of most schools, success at academic tasks has little value for many individuals and could even be a deterrent to popularity with peers.

**Motivation to achieve**
Motivation to achieve is reflected in the effort individuals commit to strive to acquire increased understanding and skills they perceive as meaningful and worthwhile. While humans might be born with a motivation to increase their competencies, motivation to achieve is basically induced through interpersonal processes, either internalized relationships or current interaction patterns within a learning situation. Depending on whether students interact within a context of positive, negative, or no interdependence, different patterns of interaction result, causing different motivational systems, which in turn affect achievement differently, determining expectations for future achievement. The motivational system promoted in cooperative situations includes intrinsic motivation, high expectations for success, high incentive to achieve based on mutual benefit, high epistemic curiosity and continuing interest in achievement, high commitment to achieve, and high persistence. The motivational system promoted in competitive situations includes extrinsic motivation to win, low expectations for success by all but those with the highest ability, low incentive to learn based on differential benefit, low epistemic curiosity, a lack of continuing interest to achieve, a lack of commitment to achieving, and low task persistence by most individuals. The motivational system promoted in individualistic situations includes extrinsic motivation to meet present criteria of excellence, low expectations for success by all but those with the highest ability, an incentive to achieve based on self-benefit, low epistemic curiosity and continuing interest to achieve, low commitment to achieving, and low task persistence by most individuals.

Motivation is most commonly viewed as a combination of the perceived likelihood of success and the perceived incentive for success. The greater the likelihood of success and the more important it is to succeed, the higher the motivation. Success that is intrinsically rewarding is usually seen as more desirable for learning than is having students to believe that only extrinsic rewards are worthwhile. The likelihood of success is perceived as greater, and success is viewed as more important in cooperative than in competitive or individualistic learning situations. Striving for mutual benefit results in an emotional bonding, with collaborators liking each other, wanting to help each other succeed, and being committed to each other’s well-being. These positive feelings toward the group and the other members could have a number of important influences on intrinsic motivation to achieve and actual productivity. In many cases, the relationships among group members can become more important than the actual rewards given for the work being done. Consequences provided by group members (for example, respect, liking, blame, rejection) can supplement or replace those produced by task performance (for example, salary or grades). Such consequences might be important in sustaining behavior during periods when no task-based reinforcement is received.

**Interpersonal trust**
To disclose one’s reasoning and information, one must trust the other individuals involved in the situation to listen with respect. Trust is a central dynamic of promotive interaction. It tends to be developed and maintained in cooperative situations and tends to be absent and destroyed in competitive and individualistic situations. Trust includes several elements:
Interpersonal trust is built by placing one’s consequences in the control of others and having one’s confidence in the others confirmed. It is destroyed by placing one’s consequences in the hands of others and having one’s confidence in the others disconfirmed through their behaving in ways that ensure harmful consequences for oneself. Thus, trust includes two sets of behaviors. Trusting behavior is the willingness to risk beneficial or harmful consequences by making oneself vulnerable to another person. Trustworthy behavior is the willingness to respond to another person’s taking risks in a way that ensures that the other person will experience beneficial consequences. To establish trust, two or more people must be trustworthy and trusting. In cooperative situations, individuals tend to be both trusting and trustworthy; in competitive situations, they tend to be distrusting and untrustworthy, using information to promote their own success and the other’s failure.

**Anxiety and performance**

Cooperation typically produces less anxiety and stress and more effective coping strategies to deal with anxiety than does competition. Anxiety is one of the most pervasive barriers to productivity and positive interpersonal relationships, generally leading to an egocentric preoccupation with oneself, disruption of cognitive reasoning, and avoidance of the situation one fears. They in turn can mean skipping school or work, cutting classes or taking long breaks, or avoiding challenging situations at school or work. Furthermore, continued experience involving even moderate levels of anxiety over a number of years can produce psychological and physiological harm. Especially for individuals with a chronic high state of anxiety, cooperation promotes a better climate for learning and work.

**Summary of promotive interaction**

Positive interdependence results in promotive interaction, which in turn promotes efforts to achieve, positive interpersonal relationships, and psychological health. Promotive interaction can be defined as individuals encouraging and facilitating each other’s efforts to achieve, complete tasks, and produce to reach the group’s goals. It is characterized by individuals providing each other with efficient and effective assistance, exchanging needed resources, such as information and materials, and processing information more efficiently and effectively, providing each other with feedback to improve their subsequent performance or their assigned tasks and responsibilities, challenging each other’s conclusions and reasoning to promote higher-quality decision making and greater insight into the problems being considered, advocating the exertion of effort to achieve mutual goals, influencing each other’s efforts to achieve the group’s goals, being motivated to strive for mutual benefit, acting in trusting and trustworthy ways, and exhibiting a moderate level of arousal characterized by low anxiety and stress. Oppositional interaction results in the opposite pattern of interaction. Promotive interaction results in a number of important outcomes that can be subsumed under three broad categories: effort exerted to achieve, quality of relationships among participants, and participants’ psychological adjustment and social competence.

**Learning Outcomes**

Different learning outcomes result from the interaction between students promoted by the use of cooperative, competitive, and individualistic goal structures. The numerous outcomes of cooperative efforts can be subsumed under the three broad categories cited in the previous paragraph. Because research participants have varied as to economic class, age, sex, and cultural background, because a wide variety of research tasks and measures of the dependent variables have been used, and because the research has been conducted by many different researchers with markedly different orientations working in different settings and in different decades, the overall body of research on social interdependence has considerable generalizability.
Effort to Achieve

Achievement
The potential value of cooperative learning in large college classes is highlighted by a recent study designed to identify what specific factors contributed to students’ learning in large classes. The survey of 800 college students found that the second most frequently cited factor contributing to their learning in large classes was “other students,” leading the researchers to conclude that faculty might wish to use cooperative learning in large classes. A comparison of the cost-effectiveness of four academic strategies concluded that working with classmates is the most cost-effective support system for increasing college students’ achievement.

That working together to achieve a common goal results in higher achievement and greater productivity than does working alone is so well confirmed by so much research that it stands as one of the strongest principles of social and organizational psychology. Cooperative learning is indicated whenever the goals of learning are highly important, mastery and retention are important, the task is complex or conceptual, problem solving is desired, divergent thinking or creativity is desired, quality of performance is expected, and higher-level reasoning strategies and critical thinking are needed.

Why does cooperation result in higher achievement? The critical issue in understanding the relationship between cooperation and achievement is specifying the variables that mediate the relationship. Simply placing students in groups and telling them to work together does not of itself promote higher achievement. It is only under certain conditions that the group’s efforts can be expected to be more productive than individual efforts. Those conditions are clearly perceived positive interdependence, considerable promotive (face-to-face) interaction, felt personal responsibility (individual accountability) to achieve the group’s goals, frequent use of relevant interpersonal and small-group skills, and periodic and regular group processing.

Critical thinking competencies.
In addition to the research directly relating cooperative learning with critical thinking, certain lines of research link critical thinking and cooperative learning. At least three elements of teaching make a difference in college students’ gains in thinking skills: (1) discussion among students, (2) explicit emphasis on problem-solving procedures and methods using varied examples, and (3) verbalization of methods and strategies to encourage development of metacognition.

Student participation, teacher encouragement, and student-to-student interaction positively relate to improved critical thinking. These three activities confirm other research and theory stressing the importance of active practice, motivation, and feedback in thinking skills as well as other skills. This confirms that discussions, especially in small classes, are superior to lectures in improving thinking and problem solving.

The explicit teaching of higher-level reasoning and critical thinking does not depend on what is taught, but rather on how it is taught. “The only significant change that is required is a change in teaching methodology.” Cooperative learning is such a change.

Research indicates that cooperative learning is an important procedure for involving students in meaningful activities in the classroom and engaging in situated cognition. Higher-level writing assignments can also best be done by cooperative peer response groups.

Attitudes toward subject area. Cooperative learning experiences, compared with competitive and individualistic ones, promote more positive attitudes toward the subject area, more positive attitudes toward the instructional experience, and more continuing motivation to learn more about the subject area being studied. A study comparing group discussion and lecturing found that students in discussion sections had significantly more favorable attitudes toward psychology than the other groups; a follow-up of the students three years later revealed that seven students each from the tutorial and discussion groups majored in psychology, whereas none of those in the recitation group did so. Students who had opportunities in class to interact with classmates and the instructor were more satisfied with their learning experience than students
who were taught exclusively by lecture. Students who participated in discussion groups in class were more likely to develop positive attitudes toward the course’s subject matter. And one of the major conclusions of the Harvard Assessment Seminars was that the use of cooperative learning groups resulted in a large increase in satisfaction with the class. These findings have important implications for influencing female and minority students to enter careers oriented toward science and mathematics.

**Interpersonal relationships**

**Interpersonal attraction and cohesion.** To be more productive, a class of students must cohere and share a positive emotional climate. As relationships within the class or college become more positive, absenteeism decreases and students’ commitment to learning, feeling of personal responsibility to complete the assigned work, willingness to take on difficult tasks, motivation and persistence in working on tasks, satisfaction and morale, willingness to endure pain and frustration to succeed, willingness to defend the college against external criticism or attack, willingness to listen to and be influenced by peers, commitment to peers’ success and growth, and productivity and achievement can be expected to increase.

**Social support**

Social support tends to be related to several factors:

1. Achievement, successful problem solving, persistence on challenging tasks under frustrating conditions, lack of cognitive interference during problem solving, lack of absenteeism, academic and career aspirations, more appropriate seeking of assistance, retention, job satisfaction, high morale, and greater compliance with regimens and behavioral patterns that increase health and productivity;
2. A longer life, recovering from illness and injury faster and more completely, and experiencing less severe illnesses;
3. Psychological health and adjustment, lack of neuroticism, and psychopathology, reduction of psychological distress, the ability to cope effectively with stressful situations, self-reliance and autonomy, a coherent and integrated self-identity, greater psychological safety, higher self-esteem, increased general happiness, and increased interpersonal skills;
4. Effective management of stress by providing the caring, information, resources, and feedback individuals need to cope with stress, reducing the number and severity of stressful events in an individual’s life, reducing anxiety, and helping to appraise the nature of the stress and one’s ability to deal with it constructively; and
5. The emotional support and encouragement individuals need to cope with the risk that is inherently involved in challenging one’s competence in striving to grow and develop.

The importance of social support has been ignored in education over the past 30 years. The pressure to achieve should always be matched with an equal level of social support; that is, challenge and security must be kept in balance. Whenever increased demands and pressure to be productive are placed on students (and faculty), social support should be increased correspondingly.

**Student retention.** According to the Study Group on the Conditions of Excellence in Higher Education:

*Traditional classroom teaching practices in higher education favor the assertive student. But our analysis indicates that instructors should give greater attention to the passive or reticent student... Passivity is an important warning sign that may reflect a lack of involvement that impedes the learning process and leads to unnecessary attrition.*

Approximately one-half of all students who leave college do so during their freshman year, and many of the departures take place during the first semester. The major reasons for dropping out of college could be failure to establish a social network of friends and classmates and to become academically involved in classes.

The greater the degree of students’ involvement in their college learning experience, the more likely they are to persist to graduation. The processes of social involvement, integration, and bonding with classmates are
strongly related to higher rates of retention. On the basis of research conducted over 10 years, students’ involvement academically and socially in college is the cornerstone of persistence and achievement, and active involvement in learning is especially critical for “withdrawal-prone” students, such as disadvantaged minorities, who have been found to be particularly passive in academic settings.

Cooperative learning experiences tend to lower attrition rates in college. In one study, students working on open-ended problems in small groups of four to seven were more likely to display lower rates of attrition and higher rates of academic achievement than those not involved in group learning. The five-year retention rate for African-American students majoring in math or science at Berkeley who were involved in cooperative learning, for example, was 65 percent, compared to 41 percent for African-American students not involved. The percentage of African-American students involved in cooperative learning who graduated in mathematics-based majors was 44 percent, compared to only 10 percent for a control group of African-American students not participating in cooperative learning groups.

College students report greater satisfaction with courses that allow them to engage in group discussion, and students are more likely to stay in college if they are satisfied with the learning experience. Cooperative learning allows for significant amounts of meaningful discussion, enhancing students’ satisfaction with the learning experience and promoting retention.

**Faculty relationships with students.** Many college faculty report that they get to know their students better when they use cooperative learning groups. The process of observing students work in small groups and then interviewing seems to create more personal and informal interactions between the instructor and the students than do lectures and discussions involving the whole class. Interacting with students in small groups, for example, gives instructors a chance to learn and address students by name. “Addressing students by name” correlates significantly with students’ overall satisfaction with the course and the instructor. Such informal interactions also positively affect student retention, for when faculty get to know students better in class, they could be more likely to interact with students informally outside the classroom. And the quantity and quality of out-of-class contact with faculty were strongly associated with students’ retention.

**The importance of peer relationships.** Peer relationships contribute to social and cognitive development and to socialization in numerous ways:

1. *In their interaction with peers, individuals directly learn attitudes, values, skills, and information unobtainable from adults.* In their interaction with each other, individuals imitate each other’s behavior and identify with friends possessing admired competencies. Through providing models, reinforcement, and direct learning, peers shape a wide variety of social behaviors, attitudes, and perspectives.

2. *Interaction with peers provides support, opportunities, and models for prosocial behavior.* In one’s interactions with peers, one helps, comforts, shares with, takes care of, assists, and gives to others. Without peers with whom to engage in such behaviors, many forms of prosocial values and commitments could not be developed. Conversely, whether or not individuals engage in problem or transitional behavior, such as the use of illegal drugs and delinquency, is related to the perceptions of their friends’ attitudes toward such behaviors. Being rejected by one’s peers tends to result in antisocial behavioral patterns characterized by aggressiveness, disruptiveness, and other negatively perceived behaviors.

3. *Peers provide models of, expectations of, directions for, and reinforcements of learning to control impulses.* Individuals frequently lack the perspective of time needed to tolerate delays in gratification. As they develop and are socialized, the focus on their own immediate impulses and needs is replaced with the ability to take longer perspectives of time. Peer interaction involving aggressive impulses like, for example, rough-and-tumble play promotes the acquisition of a repertoire of effective aggressive behaviors and helps establish the necessary regulatory mechanisms for modulating aggressive actions.

4. *Students learn to view situations and problems from perspectives other than their own.* Taking such perspectives is one of the most critical competencies for cognitive and social development. All psychological development can be described as a progressive loss of egocentrism and an increase in
ability to take wider and more complex perspectives. It is primarily in interaction with peers that egocentrism is lost and the ability to take a wider perspective is gained.

5. **Relationships with peers are powerful influences on the development of the values and the social sensitivity required for autonomy.** Autonomy is the ability to understand what others expect in any given situation and to be free to choose whether to meet their expectations. Autonomous people are independent of both extreme inner- or outer-directedness. When making decisions about appropriate social behavior, autonomous people tend to consider both their internal values and the situation and then respond in flexible and appropriate ways. Autonomy is the result of the internalization of values (including appropriate self-approval) derived from caring and supportive relationships, and the acquisition of social skills and sensitivity. Individuals with a history of isolation from or rejection by peers often are inappropriately other-directed. They conform to group pressures even when they believe the recommended actions are wrong or inappropriate.

6. **Close and intimate relationships with peers provide others with whom young people can share their thoughts and feelings, aspirations and hopes, dreams and fantasies, joys and pains.** Young people need constructive peer relationships to avoid the pain of loneliness.

7. **Peer relationships help develop a frame of reference for perceiving oneself.** Throughout infancy, childhood, adolescence, and early adulthood, a person moves through several successive and overlapping identities. The physical changes involved in growth, increasing number of experiences with other people, increasing responsibilities, and general cognitive and social development will cause changes in self-definition. The final result should be a coherent and integrated identity. In peer relationships, children and adolescents become aware of the similarities and differences between themselves and others. They experiment with a variety of social roles that help them integrate their own sense of self. In peer relationships, values and attitudes are clarified and integrated into an individual's self-definition, gender typing and its impact on one’s identity, for example.

8. **Coalitions formed during childhood and adolescence provide help and assistance throughout adulthood.**

9. **Friendships during childhood and adolescence seem to decrease the risk of mental disorder.** The ability to maintain independent, cooperative relationships is a prime manifestation of psychological health. Poor peer relationships in elementary school predict psychological disturbance and delinquency in high school, and poor peer relationships in high school predict adult pathology.

10. **In both educational and work settings, peers have a strong influence on productivity.** Greater achievement is typical in collaborative situations where peers work together than in situations where individuals work alone.

11. **Students’ educational aspirations could be more influenced by peers rather than by other social influence.** Similarly, ambition in career settings is greatly influenced by peers. In instructional settings, peer relationships can be structured to create meaningful interdependence through learning cooperatively with peers. In cooperative learning situations, students experience feelings of belonging, acceptance, support, and caring, and the social skills and social roles required for maintaining interdependent relationships can be taught and practiced.

Through repeated cooperative experiences, students can develop the social sensitivity to learn what behavior is expected from others and the actual skills and autonomy to meet such expectations if they so desire. Through holding each other accountable for appropriate social behavior, students can greatly influence the values they internalize and the self-control they develop. Through belonging to a series of interdependent relationships, students learn and internalize values. Through prolonged cooperative interaction with other people, healthy social development and general trust rather than distrust of other people, the ability to view situations and problems from a variety of perspectives, a meaningful sense of direction and purpose in life, an awareness of mutual interdependence with others, and an integrated and coherent sense of personal identity take place.

For peer relationships to be constructive influences, they must promote feelings of belonging, acceptance, support, and caring rather than feelings of hostility and rejection. Being accepted by peers is related to willingness to engage in social interaction, using abilities to achieve goals, and providing positive social rewards for peers. Isolation from peers is associated with high anxiety, low self-esteem, poor interpersonal
skills, emotional handicaps, and psychological pathology. Rejection by peers is related to disruptive classroom behavior, hostile behavior and negative affect, and negative attitudes toward other students and school. To promote constructive influences from peers, teachers must therefore first ensure that students interact with each other and then that the interaction takes place within a cooperative context.

**Psychological health**

**Psychological adjustment.** When students leave college, they need the psychological health and stability required to build and maintain relationships in a career, family, and community, to establish a basic and meaningful interdependence with other people, and to participate effectively in society. Studies on the relationship between cooperation and psychological health indicate that cooperativeness is positively related to a number of indices of psychological health: emotional maturity, well-adjusted social relations, strong personal identity, and basic trust in and optimism about people. Competitiveness seems also to be related to a number of indices of psychological pathology: emotional immaturity, social maladjustment, delinquency, self-alienation, and self-rejection. Colleges and college classes should be organized cooperatively to reinforce those traits and tendencies that promote students’ psychological well-being.

**Accuracy of perspective.** Taking a social perspective is the ability to understand how a situation appears to another person and how that person is reacting cognitively and emotionally to the situation. The opposite of taking a perspective is egocentrism, that is, being embedded in one’s own viewpoint to the extent that one is unaware of other points of view and of the limitation of one’s perspective. Cooperative learning tends to promote greater cognitive and affective perspective taking than do competitive or individualistic learning experiences. In one study, students participating in class discussions (as opposed to listening to lectures) showed greater insight (as rated by clinical psychologists) into problems of the young women depicted in the film, *The Feeling of Rejection.*

**Self-esteem.** High self-esteem seems desirable, because individuals with low self-esteem tend to:

1. Have low productivity because they set low goals for themselves, lack confidence in their ability, and assume that they will fail no matter how hard they try;
2. Be critical of others as well as themselves by looking for flaws in others and trying to tear them down;
3. Withdraw socially because they feel awkward, self-conscious, and vulnerable to rejection;
4. Be conforming, agreeable, highly persuadable, and highly influenced by criticism;
5. Develop more psychological problems, such as anxiety, nervousness, insomnia, depression, and psychosomatic symptoms.

In competitive situations, self-esteem tends to be based on the contingent view of one’s competence that “If I win, then I am worthwhile as a person, but if I lose, then I am not.” Winners attribute their success to superior ability and attribute the failure of others to lack of ability, both of which contribute to self-aggrandizement. Losers, who are the vast majority, defensively tend to be self-disparaging and apprehensive about evaluation, and tend to withdraw psychologically and physically. In individualistic situations, students are isolated from one another, receive little direct comparison with or feedback from peers, and perceive evaluations as inaccurate and unrealistic. The result is a defensive avoidance, an apprehension of evaluation, and a distrust of peers. In cooperative situations, however, individuals tend to interact, promote each other’s success, form multidimensional and realistic impressions of each other’s competencies, and provide accurate feedback. Such interaction tends to promote a basic self-acceptance of oneself as a competent person.

**Relationships among Outcomes**

Bidirectional relationships exist among achievement, quality of interpersonal relationships, and psychological health, and each influences the other. The more students work cooperatively, the more they care about each other. Caring and committed friendships come from a sense of mutual accomplishment, from mutual pride in joint work, and from the bonding that results from joint efforts. And the more students care about each other, the harder they will work to achieve mutual goals for learning. Long-term and persistent
efforts to achieve tend to come not from the head but from the heart. Individuals seek out opportunities to work with those they care about. As caring increases, so do feelings of personal responsibility to do one’s share of the work, willingness to take on difficult tasks, motivation and persistence in working toward the goal, and willingness to endure pain and frustration on behalf of the group. All contribute to a group’s productivity.

In addition, the joint success experienced in working together to get the job done enhances social competencies, self-esteem, and general psychological health. The healthier psychologically individuals are, the better able they are to work with others to achieve mutual goals. Joint efforts require coordination, effective communication, leadership, and management of conflicts. States of depression, anxiety, guilt, shame, and anger decrease the energy available to contribute to a cooperative effort.

Finally, the more positive interpersonal relationships are, the greater the psychological health of the individuals involved. Through the internalization of positive relationships, direct social support, shared intimacy, and expressions of caring, psychological health and the ability to cope with stress are built. The absence of caring and committed relationships and the presence of destructive relationships tend to increase psychological pathology. States of depression, anxiety, guilt, shame, and anger decrease individuals’ ability to build and maintain caring and committed relationships. The healthier psychologically individuals are, the more meaningful and caring the relationships they can build and maintain.

**Reducing the Discrepancy**

With the amount of evidence available, it is surprising that the practice in college classrooms is so oriented toward competitive and individualistic learning and that colleges are so dominated by competitive and individualistic organizational structures. It is time for the discrepancy to be reduced between what research indicates is effective in teaching and what college faculty actually do. To do so, faculty must understand the role of the instructor in implementing cooperative learning. The next three sections focus on the instructors’ role in using formal cooperative learning groups, informal cooperative learning groups, and cooperative base groups.