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Appendix A: Research On Constructive Controversy

Introduction

Constructive controversy was developed in the mid-1960s as an application of the theory and research in the field of conflict resolution. It is directly based on conflict resolution theory and has received considerable research validation. It is one of the most validated conflict resolution programs currently being implemented in schools. Constructive controversy is a classic example of the interaction among theory, research, and practice. Ideally, theory guides and summarizes research, research validates or disconfirms theory (thereby leading to its refinement and modification), and effective practice is guided by validated theory yet reveals inadequacies that lead to further refinement of the theory and new research studies. Based largely on social interdependence theory (and related theorizing on positive conflict), a set of practical procedures was developed and a systematic, long-term program of research was conducted to validate the effectiveness of the implementation of the procedures in school settings. This combination of theory, research, and practice is somewhat unique in the social sciences.

In this chapter a theoretical model will be presented, the relevant research will be reviewed, the process of controversy, and the limiting conditions will be discussed.

General Characteristics Of Controversy Research

The research on constructive controversy has been conducted in the last 35 years by several different researchers in a variety of settings using many different participant populations and many different tasks within an experimental and field-experimental format (see Tables 1 and 2). For a detailed listing of all the supporting studies, see Johnson and Johnson (1979, 1989, 2003). All studies randomly assigned participants to conditions. The studies have all been published in journals (except for one dissertation), have high internal validity, and have lasted from one to sixty hours. The studies have been conducted on elementary, intermediate, and college students. The studies have lasted from one to over 30 hours. Taken together, their results have considerable validity and generalizability. A recent meta-analysis provides the data to validate or disconfirm the theory. Weighted effect sizes were computed for the 28 studies included in the analyses.

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Figure 1: Processes Of Controversy, Debate, Concurrence Seeking

Presented With Problem / Decision, Initial Conclusion

Present And Listen; Confronted With Opposing Position

Uncertainty, Cognitive Conflict Disequilibrium

Cooperative/Controversy	Competitive/Debate	Concurrence-Seeking
Epistemic Curiosity, Information Search	Closed Minded Rejection	Ignore, Avoid
Incorporation Of New Information, Adapt To Diverse Perspectives, New Conclusion	Rigid Adherence To Original Position	Quick Compromise To End Conflict

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Outcomes Of Controversy

Numerous outcomes of controversy have been documented by the research. They may be classified into three broad categories--achievement, positive interpersonal relationships, and psychological health.

Quality Of Decision Making And Problem Solving, Achievement, And Retention

From Table 1 it may be seen that controversy tends to result in greater mastery and retention of the material and skills being learned than did concurrence-seeking (effect size = 0.68), debate (effect size =0.40), or individualistic learning (effect size = 0.87). There is evidence that constructive controversy tends to result in higher-quality decisions (including decisions that involve ethical dilemmas) and higher-quality solutions to complex problems for which different viewpoints can plausibly be developed (Boulding, 1964; Glidewell, 1953; Hall & Williams, 1966, 1970; Hoffman, Harburg, & Maier, 1962; Hoffman & Maier, 1961; Maier & Hoffman, 1964; Maier & Solem, 1952). Skillful participation in a constructive controversy tends to result in (a) significantly greater ability to recall the information and reasoning contained in own and others' positions, (b) more skillfully transferring of this learning to new situations, and (c) greater generalization of principles learned to a wider variety of situations than do concurrence-seeking, debate, or individualistic efforts. The resolution of a controversy is likely to be in the direction of correct problem-solving, even when the initial conclusions of all group members are erroneous and especially when individuals are exposed to a credible minority view (as opposed to a consistent single view) even when the minority view is incorrect.

An interesting question concerning controversy and problem solving is, *What happens when erroneous information is presented by participants?* Simply, can the advocacy of two conflicting but wrong solutions to a problem create a correct one? In most of the studies conducted, two conflicting but legitimate alternative solutions were advocated by members of problem-solving groups. There are creative contributions, however, that may be made by opposing positions, even when they are wrong. The value of the controversy process lies not so much in the correctness of an opposing position, but rather in the attention and thought processes it induces. More cognitive processing may take place when individuals are exposed to more than one point of view, even if the point of view is incorrect. Nemeth and Wachtler (1983) found that subjects exposed to a credible minority view generated more solutions to a problem and more correct solutions than did subjects exposed to a consistent single view, even if the minority view was incorrect. A number of studies on cognitive reasoning have focused on the ways in which nonconserving, cognitively immature children can be influenced to gain the critical insights into conservation. Presenting immature children with erroneous information that conflicts with their initial position has been found to promote some cognitive growth, although not as

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much growth as when they received correct information (Cook & Murray, 1973; Doise, Mugny, & Perret-Clermont, 1976; Murray, 1972). On subsequent posttests taken individually after the controversy, significant gains in performance were recorded. Ames and Murray (1982) compared the impact of controversy, modeling, and nonsocial presentation of information on the performance of nonconserving, cognitively immature children on conservation tasks. The immature children were presented with erroneous information that conflicted with their initial position. Ames and Murray found modest but significant gains in conservation performance. Three children with scores of 0 out of 18 scored between 16 and 18 out of 18 on the posttest, and 11 children with initial scores of 0 scored between 5 and 15. They conclude that conflict **qua** conflict is not only cognitively motivating, but that the resolution of the conflict is likely to be in the direction of correct performance. In this limited way, two wrongs came to make a right.

Table 1: General Characteristics Of Studies

Characteristic	Number	Percent
1970-1979	12	43
1980-1989	16	57
Random Assigned Subjects	22	79
No Random Assignment	6	21
Grades 1 – 3	7	25
Grades 4 – 6	7	25
Grades 10 – 12	2	7
College	10	36
Adult	2	7
Published In Journals	27	96
Dissertations	1	4
1 Session	12	43
2-9 Sessions	6	21
10-20 Sessions	8	29
20+ Sessions	2	7

Cognitive And Moral Reasoning

Cognitive development theorists such as Piaget, Flavell, and Kohlberg have posited that it is repeated interpersonal controversies in which individuals are forced again and again to take cognizance of the perspective of others that promote cognitive and moral development, the ability to think logically, and the reduction of egocentric reasoning. Such interpersonal conflicts are posited to create disequilibrium within individuals' cognitive structures, which motivate a search for a more adequate and mature process of reasoning. The impact of controversy on cognitive and moral reasoning has been found in varied size groups and among markedly diverse student populations.

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Students who participate in academic controversies end up using more higher-level reasoning and metacognitive thought more frequently than students participating in concurrence seeking (effect size = 0.62), debate (effect size = 1.35), or individualistic efforts (effect size = 0.90). There are several studies that demonstrated that pairing a conserver with a nonconserver, and giving the pair conservation problems to solve and instructing them to argue until there is agreement or stalemate, resulted in the conserver's answer prevailing on the great majority of conservation trials and in the nonconserver learning how to conserve. Change tended to be unidirectional and nonreversible. Children who understood conservation did not adopt erroneous strategies while nonconservers tended to advance toward a greater understanding of conservation. Even two immature children who argued erroneous positions about the answer tended to make modest but significant gains toward an understanding of conservation. The discussion of the task per se did not produce the effects. There had to be conflict among individuals' explanations for the effects to appear.

The same thing seems to happen with level of moral reasoning. There are a number of studies that demonstrate that when subjects are placed in a group with peers who use a higher stage of moral reasoning, and the group is required to make a decision as to how a moral dilemma should be resolved, advances in the students' level of moral reasoning result (Johnson & Johnson, 1989). In a recent study, Tichy-Reese (2006) examined the impact of controversy compared with individualistic learning on the four components of moral development (Narvaez & Rest, 1995). Although she did not find a consistent effect on moral sensitivity, controversy tended to result in significantly higher levels of moral motivation, moral judgment, and moral character.

Exchange Of Expertise

Compared with concurrence-seeking, debate, and individualistic efforts, controversy tends to result in greater exchange of expertise. Students often know different information and theories, make different assumptions, and have different opinions. Within any cooperative learning group, naturally occurring controversies become inevitable as students with a wide variety of expertise and perspectives work together to maximize each member's learning and students who study different parts of an assignment are expected to share their expertise with the other members of their group. Knowing the procedures for exchanging information and perspectives and how to engage in intellectual controversies are essential competencies for maximizing one's learning and growth.

Perspective Taking

Understanding and considering all perspectives is important if difficult issues are to be discussed, the decision is to represent the best reasoned judgment of all participants, and all participants are to help implement the decision. Constructive controversy tends to promote

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more accurate and complete understanding of opposing perspectives than do concurrence seeking (ES = 0.91), debate (ES = 0.22), and individualistic efforts (ES = 0.86). Engaging in controversy tends to result in greater understanding of another person's cognitive perspective than the absence of controversy and individuals engaged in a controversy tend to be better able subsequently to predict what line of reasoning their opponent would use in solving a future problem than were individuals who interacted without any controversy. The increased understanding of opposing perspectives tends to result from engaging in controversy (as opposed to engaging in concurrence-seeking discussions or individualistic efforts) regardless of whether one is a high-, medium-, and low-achieving student.

Table 2: Meta-Analysis Of Academic Controversy Studies: Mean Effect Sizes

Dependent Variable	Controversy / Concurrence Seeking	Controversy / Debate	Controversy / Individualistic Efforts
Achievement	0.68	0.40	0.87
Cognitive Reasoning	0.62	1.35	0.90
Perspective Taking	0.91	0.22	0.86
Motivation	0.75	0.45	0.71
Attitudes Toward Task	0.58	0.81	0.64
Interpersonal Attraction	0.24	0.72	0.81
Social Support	0.32	0.92	1.52
Self-Esteem	0.39	0.51	0.85

Creativity

By blending the breath of the sun and the shade, true harmony comes into the world.

Tao Te Ching

From the research it may be concluded that controversy tends to promote creative insight by influencing individuals to (a) view problems from different perspectives and (b) reformulate problems in ways that allow the emergence of new orientations to a solution. There is evidence that controversy increases the number of ideas, quality of ideas, feelings of stimulation and enjoyment, and originality of expression in creative problem- solving (Bahn, 1964; Bolen & Torrence, 1976; Dunnette, Campbell & Jaastad, 1963; Falk &

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Johnson, 1977; Peters & Torrance, 1972; Torrance, 1970, 1971, 1973; Triandis, Bass, Ewen, & Mikesell, 1963). Being confronted with credible alternative views has resulted in the generation of more novel solutions (Nemeth & Wachtler, 1983), varied strategies (Nemeth & Kwan, 1985b), and original ideas (Nemeth & Kwan, 1985a). And there is also evidence that controversy resulted in more creative problem solutions, with more member satisfaction, compared to group efforts that did not include controversy (Glidewell, 1953; Hall & Williams, 1966, 1970; Hoffman, Harburg, & Maier, 1962; Maier & Hoffman, 1964; Rogers, 1970). These studies further demonstrated that controversy encouraged group members to dig into a problem, raise issues, and settle them in ways that showed the benefits of a wide range of ideas being used, as well as resulting in a high degree of emotional involvement in and commitment to solving problems.

Task Involvement

John Milton, in **Doctrine and Discipline**, stated Where there is much desire to learn, there of necessity will be much arguing, much writing, many opinions; for opinion in good men is but knowledge in the making. Making knowledge through disagreement arouses emotions and increases involvement. **Task involvement** refers to the quality and quantity of the physical and psychological energy that individuals invest in their efforts to achieve. Task involvement is reflected in the attitudes participants have toward the:

1. **Task:** Individuals who engaged in controversies tended to **like the task** better than did individuals who engaged in concurrence-seeking discussions or individualistic efforts (Johnson, Johnson, Pierson, & Lyons, 1985; Lowry & Johnson, 1981; Smith, Johnson, & Johnson, 1981).

2. **Controversy Experience:** Individuals involved in controversy (and to a lesser extent, debate) **liked the procedure** better than did individuals working individualistically (Johnson & Johnson, 1985) and participating in a controversy consistently promoted positive attitudes toward the experience (Johnson, Johnson, Pierson, & Lyons, 1985; Johnson, Johnson & Tiffany, 1984; R. Johnson, Brooker, Stutzman, Hultman, & Johnson, 1985; Lowry & Johnson, 1981; Smith, Johnson, & Johnson, 1981, 1984).

The effectiveness of any management or instructional strategy is directly related to the capacity of the strategy to increase task involvement. Participants' time and energy are finite resources and success can be evaluated in terms of increasing the time and energy individuals will commit to their success.

Attitude Change About The Issue

Open-minded consideration of all points of view is critical for deriving well reasoned decisions that integrate the best information and thought from a variety of positions. If

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peace is to be maintained, participants must open-mindedly believe that opposing positions are based on legitimate information and logic that, if fully understood, will lead to creative solutions that benefit everyone. Involvement in a controversy tends to result in attitude and position change. Participants in a controversy tend to reevaluate their attitudes about the issue and incorporate opponents' arguments into their own attitudes. Participating in a controversy tends to result in attitude change beyond that which occurs when individuals read about the issue and these attitude changes tend to be relatively stable over time (i.e., not merely a response to the controversy experience itself).

Motivation To Improve Understanding

Building and maintaining peace is typically enhanced by a continuing motivation to learn more about the issues being considered. Most decisions are temporary because they may be reconsidered at some future date. Continuing motivation to learn about an issue is critical for the quality of long-term decision making. Participants in a constructive controversy tend to have more continuing motivation to learn about the issue and come to the best reasoned judgment possible than do participants in concurrence seeking (ES = 75), debate (0.45), and individualistic efforts (ES = 0.64). Participants in a controversy tend to search for (a) more information and new experiences (increased specific content) and (b) a more adequate cognitive perspective and reasoning process (increased validity) in hopes of resolving the uncertainty. There is also an active interest in learning the others' positions and developing an understanding and appreciation of them. Lowry and Johnson (1981), for example, found that students involved in a controversy, compared with students involved in concurrence seeking, read more library materials, reviewed more classroom materials, more frequently watched an optional movie shown during recess, and more frequently requested information from others.

Attitudes Toward Controversy

If participants are to be committed to implement the decision and participate in future decision making, they must react favorably to the way the decision was made. Individuals involved in controversy liked the procedure better than did individuals working individualistically, and participating in a controversy consistently promoted more positive attitudes toward the experience than did participating in a debate, concurrence-seeking discussions, or individualistic decisions. Controversy experiences promoted stronger beliefs that controversy is valid and valuable. The more positive the attitudes toward the process of making the decision, the more committed participants may feel to implement the decision.

Attitudes Toward Decision Making

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If participants are to be committed to implement the decision and participate in future decision making, they must consider the decision worth making. Individuals who engaged in controversies tended to like the decision making task better than did individuals who engaged in concurrence-seeking discussions (ES = 0.63).

Interpersonal Attraction And Support Among Participants

It is often assumed that the presence of controversy within a group will lead to difficulties in establishing good interpersonal relations and will promote negative attitudes toward fellow group members, and it is also often assumed that arguing leads to rejection, divisiveness, and hostility among peers (Collins, 1970). Within controversy and debate there are elements of disagreement, argumentation, and rebuttal that could result in individuals disliking each other and could create difficulties in establishing good relationships. On the other hand, conflicts have been hypothesized potentially to create positive relationships among participants (Deutsch, 1962; Johnson, 1971; Johnson & F. - Johnson, 1991), but in the past there has been little evidence to validate such a hypothesis.

Learning, to be effective, must be conducted in ways that bring individuals together, not create ill-will and divisiveness. Within controversy there is disagreement, argumentation, and rebuttal that could create difficulties in establishing good relationships. Constructive controversy, however, has been found to promote greater liking among participants than did debate (ES = 0.72), concurrence-seeking (ES = 0.24), or individualistic efforts (ES = 0.81). Debate tended to promote greater interpersonal attraction among participants than did individualistic efforts (ES = 0.46). In addition, constructive controversy tends to promote greater social support among participants than does debate (ES = 0.92), concurrence-seeking (ES = 0.32), or individualistic efforts (ES = 1.52). Debate tended to promote greater social support among participants than did individualistic efforts (ES = 0.85).

Self-Esteem

Participation in future decision making is enhanced when participants feel good about themselves as a result of helping make the current decision, whether or not they agree with it. Constructive controversy tends to promote higher self-esteem than does concurrence-seeking (ES = 0.39), debate (ES = 0.51), or individualistic efforts (ES = 0.85). Debate tends to promote higher self-esteem than does individualistic efforts (ES = 0.45).

Values

Participating in the controversy process teaches such values as (a) you have both the right and the responsibility advocate your conclusions, theories, and beliefs, (b) "truth" is derived from the clash of opposing ideas and positions, (c) insight and understanding come

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from a "disputed passage" where one's ideas and conclusions are advocated and subjected to intellectual challenge, (d) issues must be viewed from all perspectives, and (e) you seek a synthesis that subsumes the seemingly opposed positions. In addition, it teaches hope and confidence in the value of deliberation, respect for the canons of civility, mutual respect, importance of arguing on the basis of factual information, importance of the common purpose of reaching a joint reasoned judgment, and affirmation of democratic political discourse even if it results in outcomes that are contrary to one's own preferences.

Open Mindedness

Individuals participating in controversies in a cooperative context tend to be more open-minded than do individuals participating in controversies in a competitive context (Tjosvold & Johnson, 1978). In deciding how to resolve a moral dilemma, when the context was cooperative there was more open-minded listening to the opposing position. When the context was competitive there was a closed-minded orientation in which participants comparatively felt unwilling to make concessions to the opponent's viewpoint and closed-mindedly refused to incorporate any of it into their own position. Within a competitive context the increased understanding resulting from controversy tended to be ignored for a defensive adherence to one's own position.

Process Of Controversy, Debate, Concurrence Seeking

> *Since the general or prevailing opinion on any subject is rarely or never the whole truth, it is only by the collision of adverse opinion that the remainder of the truth has any chance of being supplied.*
>
> John Stuart Mill

Given that controversy tends to promote higher productivity, more positive relationships, and higher self-esteem than do concurrence-seeking, debate, or individualistic efforts, the question has to be asked, *How does it do so? What are the underlying processes?* A number of developmental (Hunt, 1964; Kohlberg, 1969; Piaget, 1928, 1950), cognitive (Berlyne, 1966; Hammond, 1965, 1973), social (Janis, 1982; Johnson, 1979, 1980; Johnson & Johnson, 1979; Johnson, Johnson, & Smith, 1988; Maier, 1970), and organizational (Maier, 1970) psychologists have theorized about the processes through which conflict leads to the above outcomes. On the basis of their work, we have proposed the following process:

1. When students are presented with a problem or decision, they make an initial conclusion based on categorizing and organizing their incomplete information, limited experiences, specific perspective, dominant response, and expectations. They often

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have a high degree of confidence in their conclusions and, consequently, freeze the epistemic process.

2. When required to present their conclusions and rationale to others who have different positions, students engage in cognitive rehearsal, use higher-level reasoning strategies, and deepen their understanding of their position. When listening to the conclusions and rationale of classmates, students become uncertain as to the correctness of their views and a state of conceptual conflict or disequilibrium is aroused. They unfreeze their epistemic process. their understanding of their position, and discover higher-level reasoning strategies.

3. When required to present their conclusions and rationale to others who have different positions, students engage in cognitive rehearsal, use higher-level reasoning strategies, and deepen their understanding of their position. When listening to the conclusions and rationale of classmates, students become uncertain as to the correctness of their views and a state of conceptual conflict or disequilibrium is aroused. They unfreeze their epistemic process.

4. Students then become curious and search for (a) more information and new experiences (increased specific content) and (b) a more adequate cognitive perspective and reasoning process (increased validity) in hopes of resolving the uncertainty. This motivation to learn more is called **epistemic curiosity** (Berlyne, 1965). It is a stimulation to inquiry. Divergent attention and thought are stimulated.

5. Students derive a new, reconceptualized, and reorganized conclusion by accommodating the perspective and reasoning of others and adapting their perspective and reasoning. They create novel solutions and decisions that are qualitatively better than their initial conclusion.

The process may begin again at this point or it may be terminated by freezing the current conclusion and resolving any dissonance by increasing the confidence in the validity of the conclusion.

Step 1: Organizing Information And Deriving Conclusions

The controversy process begins with students being asked to consider a problem, issue, or question. To do so, they must conceptualize and avoid barriers to conceptualizing adequately. This involves (a) forming concepts, (b) interrelating them into a conceptual structure, and (c) logically deriving conclusions. Among other things, conceptualizing promotes learning, retention, and transfer and application of learning.

Anything that interferes with the conceptualizing process is a barrier to problem solving, decision making, and learning. Three interrelated barriers are (a) uncritically giving one's

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dominant response to the situation, (b) mental sets, and (c) fixation on the first satisfactory solution generated. First, responses may be arranged hierarchically (Berlyne, 1965, Maier, 1970) and, when confronted with a problem, individuals may quickly respond with their **dominant response** (without thinking of, evaluating, and choosing among the proper alternatives). Dominant responses based on physical states such as hunger can affect which stimuli a person attends to (Levine, Chein, & Murphy, 1942; McClelland & Atkinson, 1948), psychological states such as attitudes and beliefs (Allport & Postman, 1945; Iverson & Schwab, 1967; Shiplet & Veroff, 1952), and one's general cultural frame of reference (Bartlett, 1932). Second, **mental sets** can cause the same words to have different meanings for different persons (Foley & MacMillan, 1943), the adoption of solutions that have been previously useful (Luchins, 1942), the perception only of what is expected (Neisser, 1954), and the interpretation of ambiguous events in ways that confirm expectations (Bruner & Minturn, 1955). Third, individuals may become **fixated** on the first reasonable solution thought of (Simon, 1976)--this is called **satisficing**.

These barriers reflect the facts that in many instances people are lazy cognitive processors (they do not actively process the information that is available or do not fully consider the alternative ways of understanding such information [Langer, Blank, & Chanowitz, 1978; Taylor, 1980]) and do not think divergently. **Divergent thinking** results in more ideas (fluency) and more classes of ideas (flexibility) (Guilford, 1956). To ensure that divergent thinking takes place and all major alternatives to the problem being considered are given a fair hearing, each alternative has to be presented in a complete and persuasive way.

Controversy involves assigning the major alternatives to advocacy subgroups and having each subgroup (a) develop its alternative in depth and (b) plan how to present the best case possible for its alternative to the rest of the group. Preparing a position to be advocated within a problem-solving group has clear effects on how well the position is understood and the level of reasoning used in thinking about the position. There is evidence that when individuals know that they will have to present the best case possible for Alternative A to the group as a whole, and try to convince the other group members to decide to adopt Alternative A, they tend to understand Alternative A better than if they had simply considered it for their own use (Allen, 1976; Benware, 1975; Gartner, Kohler, & Reissman, 1971). Higher-level conceptual understanding and reasoning are promoted when individuals know they have to teach each other a common way to think about problem situations (Johnson & Johnson, 1979, 1983; Murray, 1983). The way people conceptualize and organize material cognitively has been found to be markedly different when they learned material to teach to others than when they learned material for their own benefit (Annis, 1983; Bargh & Schul, 1980; Murray, 1983). Material learned to be taught was learned at a higher conceptual level than was material learned for one's own use.

There are conditions under which individuals will gather and organize facts, information, and theories into a rationale to support a thesis statement and there are conditions under which they will not. Three of the conditions that may affect the adequacy of a person's preparation are:

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1. **The social and cognitive skills involved in formulating a rationale to support the thesis statement.** The person needs the skills of searching out relevant evidence and organizing it into a coherent and logical rationale. Doing so as part of a team requires a wide variety of interpersonal and small group skills (Johnson & F. Johnson, 2006).

2. **The effort expended doing so.** The more effort expended, the more the position is valued. Individuals generally have an enhanced regard for their own productions relative to others' (Greenwald & Albert, 1968) and the effort spent in preparing a position may be a source of enhanced regard for one's position (Zimbardo, 1965).

3. **The ego- or task-orientation underlying the person's efforts. Ego-oriented efforts** tend to focus on proving one is "right" and "better," while **task-oriented efforts** tend to focus on contributing to a process of making the best decision possible (Nicholls, 1983).

Thus, adequate preparation of the position to be advocated is dependent on being skilled in searching out relevant evidence and working with others to organize it into a coherent and logical rationale, on being willing to expend considerable effort in doing so, and on being task-oriented.

Step 2: Presenting and Advocating Positions

Advocacy may be defined as the presenting of a position and providing reasons why others should adopt it. Most students have very little experience with presenting and advocating a position and get few opportunities to do so. Within a controversy participants present and advocate positions to others who, in turn, are advocating opposing positions. Through a process of argument and counter-argument students attempt to persuade others to adopt, modify, or drop positions. This has a number of benefits. Advocating a position and defending it against refutation require engaging in considerable cognitive rehearsal and elaboration. A number of research studies have found that individuals engaged in controversy (compared with those engaged in debate, concurrence-seeking, and individualistic efforts) contributed more information to the discussion, more frequently repeated information, shared new information, elaborated the material being discussed, presented more ideas, presented more rationale, made more higher-level processing statements, made more comments aimed at managing their efforts to make high quality decisions, made fewer intermediate level cognitive processing statements, and made more statements managing the group's work (Johnson & Johnson, 1985; Johnson, Johnson, Pierson, & Lyons, 1985; Johnson, Johnson, & Tiffany, 1984; Lowry & Johnson, 1981; Nijhof & Kommers, 1982; Smith, Johnson, & Johnson, 1981, 1984). Disagreements within a group have been found to provide a greater amount of information and variety of facts as well as changes in the salience of known information (Anderson & Graesser, 1976; Kaplan, 1977; Kaplan & Miller, 1977; Vinokur & Burnstein, 1974). Peers, furthermore, have frequently been found to be more effective in teaching information to their peers than

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specially trained experts (Fisher, 1969; Sarbin, 1976). Finally, people were particularly prone to increase their commitment to a cause that they attempted to persuade another to adopt (Nel, Helmreich, & Aronson, 1969).

Edward R. Murrow, the journalist, said, *To be persuasive we must be believable; to be believable we must be credible; to be credible, we must be truthful.* For the presentation to be credible, and to have impact on the other participants in a controversy, a position must be persistently presented with consistency and confidence and, if possible, advocated by more than one person (Nemeth, Swedlund, & Kanki, 1974; Nemeth & Wachter, 1983).

Step 3: Uncertainty Created By Being Challenged By Opposing Views

In controversy, individuals' conclusions are challenged by the advocates of opposing positions. Members critically analyze each other's positions in attempts to discern weaknesses and strengths. They attempt to refute opposing positions while rebutting the attacks on their position. At the same time, they are aware that they need to learn the information being presented and understand the perspective of the other group members. Students tend to experience conceptual conflict and uncertainty when faced with (a) opposing positions and (b) challenges to the validity of their own position. The direct evidence does indicate that the greater the disagreement among group members, the more frequently disagreement occurs, the greater the number of people disagreeing with a person's position, the more competitive the context of the controversy, and the more affronted the person feels, the greater the conceptual conflict and uncertainty the person experiences (Asch, 1952; Burdick & Burnes, 1958; Festinger & Maccoby, 1964; Gerard & Greenbaum, 1962; Inagaki & Hatano, 1968, 1977; Lowry & Johnson, 1981; Tjosvold & Johnson, 1977, 1978; Tjosvold, Johnson, & Fabrey, 1980; Worchel & McCormick, 1963).

In order for cognitive conflict and uncertainty to be maximized, students must (a) be free to express their opinions, (b) accurately perceive opposing information and reasoning, (c) not be overloaded with information, (d) see opposing information as useful, (e) be challenged by a majority of group members, and (f) be challenged by valid information.

Freedom To Express Independent Opinions

Exposure to more than one point of view decreases the tendency to conform to the majority opinion and to uncritically accept the opinions of others (Asch, 1956). Hearing opposing views being advocated gives participants freedom to examine alternative and original solutions to problems without the stress of noncompliance to the majority opinion (Nemeth, 1986).

Misperceiving Opposing Information And Reasoning

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Seeking to understand the rationale supporting opposing positions is not a simple enterprise. There are a number of ways in which understanding information contradicting one's position and reasoning is subject to bias and selective perception. **First**, individuals tend to seek out, learn, and recall information that confirms and supports their beliefs (Levine & Murphy, 1943; Nisbett & Ross, 1980; Snyder & Cantor, 1979; Swann & Reid, 1981). Levine and Murphy (1943), for example, found that individuals learned and retained information congruent with their positions better than they did statements that ran counter to their positions. **Second**, individuals with certain expectations will perceive some information and events but not others (Dearborn & Simon, 1958; Foley & MacMillan, 1943; Iverson & Schwab, 1967; Neisser, 1954; Postman & Brown, 1952). **Third**, individuals' preconceptions and perspectives affect the understanding and recall of information (Allport & Postman, 1945; Bartlett, 1932; Pepitone, 1950). **Finally**, individuals who hold strong beliefs about an issue are apt to subject disconfirming evidence to highly critical evaluation while accepting confirming evidence at face value (Lord, Ross, and Lepper, 1979).

Being Overloaded With Opposing Information

Some danger of information overload and becoming confused with the complexity of the issues exists when we are required to learn opposing views and contrary information (Ackoff, 1967). There is a limit to the amount of information that human beings can process at any given time. If they are exposed to more information than they can handle, much of it will be lost. Sometimes, in the interests of accuracy or objectivity, so much information is packed into such a short period of time that nearly everything is lost. This is called **information overload**.

Perceiving Usefulness Of Opposing Position

There is also evidence that if individuals are planning to use contrary information to improve the quality of their learning, problem solving, and decision making, they will learn and utilize the information. Jones and Aneshansel (1956), for example, found that when individuals have to learn information counter to their position because they have to be ready to argue from that viewpoint at a later time, they learn it better than will those who agree with the information and therefore already have such arguments at hand.

Being Challenged By A Majority Or Minority

Whether individuals' views are challenged by a majority or by a minority of group members has important implications on the outcomes of controversy. **Majorities** exert more influence than do minorities (see Tanford & Penrod, 1984 for a review). Majorities may influence through compliance (through a comparison process) or conversion (through a validation process). In most groups, there is movement toward the majority opinion.

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Kalven and Zeisel (1966), for example, documented in a study of 225 juries that the majority position on the first ballot (i.e., held by 7-11 jury members) was the final verdict in over 85 percent of the cases. Such movement to the majority position is assumed to be based on information influence (majority judgments give information about reality) and normative influence (individuals want to be accepted and avoid disapproval) (Deutsch & Gerard, 1955). Majorities start with positive judgments and expectations (e.g., they are correct and their approval is important). Movement to the majority position usually occurs early within the group discussion (Asch, 1956). Majority viewpoints seem to be seriously considered from the beginning. Majority influence often results in overt compliance without private or latent change to majority views (Allen, 1965; Moscovici & Lage, 1976). Two types of conflict are aroused by the majority: the fear of being deviant and the fear of being wrong.

Majorities induce a concentration on the position they propose (Nemeth, 1976, 1986). Persons exposed to opposing majority views focus on the aspects of the stimuli pertinent to the position of the majority, they think in convergent ways, and they tend toward adoption of the proposed solution to the neglect of novel solutions or decisions. The quality of the solution or decision depends on the validity of the initial majority position.

Being influenced by a **minority** is different. Minorities have to convert through validating their position. The conflict aroused is based on the fear of being wrong (resistance to agreeing with a minority position, however, may be aroused by not wanting to lose membership in the majority). Minorities are often viewed negatively, sometimes with downright derision (Nemeth & Wachtler, 1983). Movement to the minority position often occurs late in the group discussion (Nemeth, Swedlund, & Kanki, 1974; Nemeth & Wachtler, 1974, 1983). Minority viewpoints need time because it is the consistency and confidence with which the minority positions are argued that leads them to receive serious consideration (Moscovici & Faucheaux, 1972; Moscovici & Nemeth, 1974). Minority influences may be latent, being detected in subsequent situations where individuals make solitary judgments (Moscovici & Lage, 1976; Moscovici, Lage, & Naffrechoux, 1969; Mugny, 1980; Nemeth & Wachtler, 1974).

Minorities, compared with majorities, stimulate a greater consideration of other alternatives and, therefore, persons exposed to opposing minority views exert more cognitive effort (Nemeth, 1976, 1986). Those exposed to minority views are stimulated to attend to more aspects of the situation, they think in more divergent ways, and they are more likely to detect novel solutions or come to new decisions. On the balance, these solutions and decisions are "better" or "more correct." Initially, opposing minority views are considered to be incorrect and are dismissed. With consistency and confidence on the minority's part over time, individuals may ask, "How can they be so wrong and yet so sure of themselves?" As a result, they are stimulated to reappraise the entire situation, which may include alternatives other than that being proposed by the minority. In other words, the thought processes are marked by divergence and, hence, the potential for detecting novel solutions or decisions.

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Much more stress is reported in majority influence situations than in minority influence ones, presumably because in the former individuals feared that they were wrong and that the majority would reject them while in the latter individuals could deride the minority and their opposing views (Asch, 1956; Maass & Clark, 1984; Nemeth, 1976; Nemeth & Wachtler, 1983). The stress induced by the majority would be expected to narrow the focus of attention and increase the likelihood that the strongest and most dominant response would be engaged in (Zajonc, 1965). The more moderate stress experienced when facing minority opposition may stimulate individuals to consider more aspects of the situation and more possible conclusions.

Being Challenged By Valid Or Erroneous Position

There is some question as to whether a minority challenge based on erroneous information and reasoning will have the same impact as will a challenge based on valid information and reasoning. As was discussed earlier, there are creative contributions made by being confronted with opposing positions, even when they are wrong. The value of the controversy lies not so much in the correctness of an opposing position, but rather in the attention and thought processes it induces. More cognitive processing may take place when individuals are exposed to more than one point of view, even if the point of view is incorrect (Nemeth & Wachtler, 1983). Subjects exposed to a credible but erroneous minority view generated more solutions to a problem and more correct solutions than did subjects exposed to a consistent single view. The advance to a higher-level reasoning process has been demonstrated to be sparked by being confronted with an opposing erroneous point of view (Cook & Murray, 1973; Doise, Mugny, & Perret-Clermont, 1976; Murray, 1974).

Summary

The direct evidence indicates that opposing information is learned more accurately within controversies than within debate, concurrence-seeking, or individualistic situations. Hearing opposing views being advocated, furthermore, stimulates new cognitive analysis and frees individuals to create alternative and original conclusions. When contrary information is not clearly relevant to completing the task at hand it may be ignored, discounted, or perceived in biased ways in favor of supporting evidence. When individuals realize, however, that they are accountable for knowing the contrary information some time in the near future, they will tend to learn it. Too much information can result in information overload. Opposing views are more effective in promoting divergent thinking and effective problem solving when they are presented by a nonmajority. Even being confronted with an erroneous point of view can result in more divergent thinking and the generation of novel and more cognitively advanced solutions.

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Step 4: Epistemic Curiosity And Perspective Taking

Macbeth said, *Stay, you imperfect speakers, tell me more.* When faced with intellectual opposition within a cooperative context, individuals tend to ask each other for more information. Conceptual conflict is hypothesized to motivate an active search for more information (often called **epistemic curiosity**) in hopes of resolving the uncertainty. The direct evidence indicates that individuals engaged in controversy (compared to persons involved in noncontroversial discussions, concurrence-seeking discussions, and individualistic efforts) are motivated to know others' positions and to develop understanding and appreciation of them (Tjosvold & Johnson, 1977, 1978; Tjosvold, Johnson, & Fabrey, 1980; Tjosvold, Johnson, & Lerner, 1981) and develop a more accurate understanding of the other positions (Smith, Johnson, & Johnson, 1981; Tjosvold & Johnson, 1977, 1978; Tjosvold, Johnson, & Fabrey, 1980). Indices of epistemic curiosity include individuals' actively (a) searching for more information, (b) seeking to understand opposing positions and rationales, and (c) attempting to view the situation from opposing perspectives.

Search For Information

There is evidence that controversy results in an active search for more information. Lowry and Johnson (1981) found that individuals involved in controversy, compared with persons involved in concurrence seeking, read more relevant material, reviewed more relevant materials, more frequently gathered further information during their free time, and more frequently requested information from others. Smith, Johnson, and Johnson (1981) found that controversy, compared with both concurrence- seeking and individualistic efforts, promoted greater use of relevant materials and more frequently giving up free time to gather further information. Johnson and Johnson (1985) and Johnson, Johnson, and Tiffany (1984) found that controversy, compared with debate and individualistic efforts, promoted greater search for more information outside of class. R. Johnson, Brooker, Stutzman, Hultman, and Johnson (1985) found that individuals engaged in controversy had greater interest in learning more about the subject being discussed than did persons engaged in concurrence seeking or individualistic efforts. Beach (1974) found that small discussion groups working cooperatively consulted more books in writing papers for a college psychology course than did individuals in a traditional lecture-competition format. Hovey, Gruber, and Terrell (1963) found that individuals who participated in cooperative discussion groups during a college psychology course engaged in more serious reading to increase their knowledge and demonstrated more curiosity about the subject matter following a course experience than did individuals in a traditional lecture-competition course format.

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Seeking To Understand Opposing Positions

Individuals engaged in controversy have been found to be motivated to know others' positions and to develop understanding and appreciation of them (Tjosvold & Johnson, 1977, 1978; Tjosvold, Johnson, & Fabrey, 1980; Tjosvold, Johnson, & Lerner, 1981). Attempting to understand opposing positions pays off. Individuals involved in a controversy developed a more accurate understanding of other positions than did persons involved in noncontroversial discussions, concurrence-seeking discussions, and individualistic efforts (Smith, Johnson, & Johnson, 1981; Tjosvold & Johnson, 1977, 1978; Tjosvold, Johnson, & Fabrey, 1980).

Perspective Taking

In order to arrive at a synthesis that is acceptable to all group members, the issue must be viewed from all perspectives. Understanding the facts being presented by other advocacy teams is not enough. The perspective from which opposing members are speaking must also be clearly understood. Group members need to be able to both comprehend the information being presented by their opposition and to understand the cognitive perspective their opposition is using to organize and interpret the information. A **cognitive perspective** consists of the cognitive organization being used to give meaning to a person's knowledge, and the structure of a person's reasoning. Tjosvold and Johnson (1977, 1980) and Tjosvold, Johnson, and Fabrey (1978) conducted three experiments in which they found that the presence of controversy promoted greater understanding of another person's cognitive perspective than did the absence of controversy. Individuals engaging in a controversy were better able subsequently to predict what line of reasoning their opponent would use in solving a future problem than were persons who interacted without any controversy.

In his dissertation, Karl Smith (1980; Smith, Johnson, and Johnson, 1981) compared the relative impact of controversy, concurrence seeking, and individualistic efforts. Eighty-four sixth-grade individuals were randomly assigned to conditions (and to groups of four within the two group conditions) stratifying for ability and sex. The study lasted for ten ninety-minute periods. Two issues were studied--the advisability of allowing logging, mining, and the use of snowmobiles and motor boats in the Boundary Waters National Park and the advisability of strip mining of coal. He found that individuals engaged in a controversy were more accurate in understanding their opponents' perspective than were persons involved in concurrence-seeking discussions or individualistic efforts. Johnson, Johnson, Pierson, and Lyons (1985) also found that individuals in the controversy condition were better able to take the opposing perspective than were individuals participating in concurrence-seeking discussions.

Perspective-taking skills are important for exchanging information and opinions within a controversy, affecting the amount of information disclosed, communication skills, accuracy

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of understanding and retention of opposing positions, and friendliness of the information exchange process (Johnson, 1971).

Step 5: Reconceptualization, Synthesis, And Integration

Andre Gide said, *One completely overcomes only what one assimilates.* Nothing could be more true of controversy. When overt controversy is structured within a problem-solving, decision-making, or learning group by identifying alternatives and assigning members to advocate the best case for each alternative, the purpose is not to choose the best alternative. The purpose is to create a synthesis of the best reasoning and conclusions from all the various alternatives. **Synthesizing** occurs when individuals integrate a number of different ideas and facts into a single position. It is the intellectual bringing together of ideas and facts and engaging in inductive reasoning by restating a large amount of information into a conclusion or summary. Synthesizing is a creative process involving seeing new patterns within a body of evidence, viewing the issue from a variety of perspectives, and generating a number of optional ways of integrating the evidence. The dual purposes of synthesis are to arrive at the best possible decision or solution and to find a position that all group members can agree on and commit themselves to. It may be hypothesized that the quality of individuals' reconceptualization, synthesis, and integration depends on the accuracy of their perspective-taking, their incorporation of others' information and reasoning into their own position, their attitude and position change, and their transition to higher stages of cognitive reasoning.

Incorporation of Others' Information and Reasoning

A more accurate understanding of the opponents' position, reasoning, and perspective has been hypothesized to result in greater incorporation of the opponents' reasoning into one's own position. There is evidence that participation in a controversy, compared with participating in noncontroversial discussions, concurrence-seeking discussions, and individualistic efforts, resulted in greater incorporation of opponents' arguments and information (Johnson & Johnson, 1985; Johnson, Johnson, & Tiffany, 1984; Tjosvold, Johnson, & Lerner, 1981).

The critical question is under what conditions will opposing information be incorporated into one's reasoning and under what conditions will it not be. Two conditions hypothesized to affect the incorporation of opposing information are (a) whether cooperative or competitive elements dominate the situation and (b) whether the participants disagree skillfully or unskillfully. Tjosvold and Johnson (1978) conducted a study utilizing 45 under-graduate individuals at Pennsylvania State University. Three conditions were included: controversy within a cooperative context, controversy within a competitive context, and no controversy. Subjects worked on resolving a moral dilemma by individually deciding what course of action should be taken, prepared for a discussion about the moral dilemma with a partner, discussed the moral dilemma with a person from

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another group, and were debriefed. The experimental session lasted ninety minutes. They found that when the context was cooperative there was more open-minded listening to the opposing position. When controversy occurred within a competitive context, a closed-minded orientation was created in which individuals comparatively felt unwilling to make concessions to the opponent's viewpoint, and closed-mindedly refused to incorporate any of it into their own position. Within a competitive context the increased understanding resulting from controversy tended to be ignored for a defensive adherence to one's own position.

Lowin (1969) and Kleinhesselink and Edwards (1975) found that when individuals were unsure of the correctness of their position, they selected to be exposed to disconfirming information when it could easily be refuted, presumably because such refutation could affirm their own beliefs. Van Blerkom and Tjosvold (1981) found that individuals selected to discuss an issue with a peer with an opposing position more frequently when the context was cooperative rather than competitive, and that individuals in a competitive situation more often selected a less competent peer to discuss an issue with. Tjosvold (1982) and Tjosvold and Deemer (1980) found that when the context was competitive, participants in a controversy understood but did not use others' information and ideas, but when the context was cooperative the information and ideas provided by opponents was used.

In addition to whether a cooperative or competitive climate dominates the situation, the skill with which individuals disagree with each other also affects the degree to which opponents' reasoning is incorporated into one's own position. Tjosvold, Johnson, and Fabrey (1980) and Tjosvold, Johnson, and Lerner (1981) found that when individuals involved in a controversy have their personal competence disconfirmed by their opponent, a closed-minded rejection of the opponent's position, information, and reasoning results. The amount of defensiveness generated influenced the degree to which individuals incorporated the opponent's information and reasoning into decision-makers' position, even when they understood accurately their opponent's position.

Attitude And Position Change

Involvement in a controversy tends to result in attitude and position change. Disagreements within a group have been found to provide a greater amount of information and variety of facts, and a change in the salience of known information which, in turn, resulted in shifts of judgment (Anderson & Graesser, 1976; Kaplan, 1977; Kaplan & Miller, 1977; Nijhof & Kommers, 1982; Vinokur & Burnstein, 1974). Controversy has promoted greater attitude change than did concurrence-seeking, no-controversy, and individualistic efforts (Johnson & Johnson, 1985; R. Johnson, Brooker, Stutzman, Hultman, & Johnson, 1985). Putnam and Geist (1985) found that the likelihood of an agreement requiring position change was highest when there were strong pro and con arguments followed by the development of qualifiers and reservations as ways of finding an acceptable consensus.

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Transition from One Stage of Cognitive Reasoning to Another

Cognitive development theorists (Flavell 1963; Kohlberg, 1969; Piaget, 1948, 1950) have posited that it is repeated interpersonal controversies (in which individuals are forced again and again to take cognizance of the perspective of others) that promote (a) cognitive and moral development, (b) the ability to think logically, and (c) the reduction of egocentric reasoning. Such interpersonal conflicts are assumed to create disequilibrium within individuals' cognitive structures, which motivate a search for a more adequate and mature process of reasoning. J. Murray (1972) and Silverman and Stone (1972) paired preoperational children with operational peers and had them argue until they came to an agreement or stalemate about the solutions to various problems. When tested alone after the interaction, 80 percent to 94 percent of the lower level pupils made significant gains in performance compared to the very much lower rates of success reported in studies of more traditional training attempts (Beilin, 1977; F. Murray, 1978). In Murray (1972) 8 out of 15 children who scored 0 out of 12 on the pretest had scores of 11 or 12 out of 12 on the various posttests.

There are several studies that demonstrated that pairing a conserver with a nonconserver, and giving the pair conservation problems to solve and instructing them to argue until there is agreement or stalemate, resulted in the conserver's answer prevailing on the great majority of conservation trials and in the nonconserver learning how to conserve (Ames & Murray, 1982; Botvin & Murray, 1975; Doise & Mugny, 1979; Doise, Mugny, & Perret-Clermont, 1976; Knight-Arest & Reid, 1978; Perret- Clermont, 1980; Miller & Brownell, 1975; Mugny & Doise, 1978; Murray, 1972; Murray, Ames, & Botvin, 1977; Silverman & Geiringer, 1973; Silverman & Stone, 1972; Smedslund, 1961a, 1961b). Inagaki (1981) and Inagaki and Hatano (1968, 1977) found that individuals (2/3 of whom were nonconservers) who were placed in small groups and given a conservation task and who argued among themselves, gave more adequate and higher level explanations than did the control subjects who did not argue with one another. Experimental subjects showed greater progress in generalizing the principle of conservation to a variety of situations and tended to resist extinction more often when they were shown an apparently nonconserving event. The discussion of the task per se did not produce the effects. There had to be conflict among individuals' explanations for the effects to appear.

The impact of controversy on cognitive and moral reasoning has been found in pairs (Silverman & Geiringer, 1973; Silverman & Stone, 1972), two on one (F. Murray, 1972), and three on two (Botvin & Murray, 1975), in kindergarten, first, second, third, and fifth grades with normal and learning disabled, although not with those disabled by communication disorders (Knight-Arest & Reid, 1978), with blacks and whites, and with middle and low socioeconomic status groups. Borys and Spitz (1979), however, did not find social interaction to be especially effective with mentally retarded institutionalized adolescents (IQ = 66, mental age = 10 years, chronological age = 20 years). Agreement is often reached quickly. Miller and Brownell (1975) found that nearly half the agreements

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were reached in less than 50 seconds and rarely took longer than 4 or 5 minutes. The advanced children did not prevail because of any greater social influence or higher IQ or because they were more skillful arguers. In arguments about best TV shows and other concepts that have no developmental or necessity attributes, the advanced children won only 41 of 90 arguments, lost 38, and stalemated 11 (Miller & Brownell, 1975). The advanced children seem to initiate discussion slightly more often, state their answer slightly more often, give good reasons, counter the others slightly more often, move stimuli more often, and appear slightly more flexible in their arguments than do the immature children, who tend to repetitiously focus on their original opinion and its justifications (Miller & Brownell, 1975; Silverman & Stone, 1972). Growth tended to occur only for the children who yield, which they do 60 to 80 percent of the time (Silverman & Geiringer, 1973). Growth tended to occur through actual insight, not through parroting the answers of the advanced peers (Botvin & Murray, 1975; Doise, Mugny, & Perret-Clermont, 1976; Gelman, 1978; Murray, 1981). Change tended to be unidirectional and nonreversible. Children who understood conservation did not adopt erroneous strategies while nonconservers tended to advance toward a greater understanding of conservation (Miller & Brownell, 1975; Silverman & Geiringer, 1973). Even two immature children who argued erroneous positions about the answer tended to make modest but significant gains toward an understanding of conservation (Ames & Murray, 1982).

Similar studies have been conducted on moral reasoning. Typically, an individual who used lower-level moral reasoning to resolve a moral dilemma was placed in a cooperative pair with a peer who used a higher-level strategy, and the two were given the assignment of making a joint decision as to how a moral dilemma should be resolved. A controversy inevitably resulted. The studies utilizing this procedure found that it tended to result in initially immature individuals increasing their level of moral reasoning (Blatt, 1969; Blatt & Kohlberg, 1973; Crockenberg & Nicolayev, 1977; Keasey, 1973; Kuhn, Langer, Kohlberg, & Haan, 1977; LeFurgy & Woloshin, 1969; Maitland & Goldman, 1974; Rest, Turiel, & Kohlberg, 1969; Turiel, 1966).

Taken together, these studies provide evidence that controversies among individuals promoted transitions to higher stages of cognitive and moral reasoning. Such findings are important as there is little doubt that higher levels of cognitive and moral reasoning cannot be directly taught (Inhelder & Sinclair, 1969; Sigel & Hooper, 1968; Sinclair, 1969; Smedslund, 1961a, 1961b; Turiel, 1973; Wallach & Sprott, 1964; Wallach, Wall, & Anderson, 1967; Wohowill & Lowe, 1962).

Summary

Students arrive at a synthesis by using higher level thinking and reasoning processes, critically analyzing information, and using both deductive and inductive reasoning. Synthesis requires that students keep conclusions tentative, accurately understand opposing

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perspectives, incorporate new information into their conceptual frameworks, and change their attitudes and positions.

Conditions Mediating Effects Of Controversy

Although controversies can operate in a beneficial way, they will not do so under all conditions. As with all types of conflicts, the potential for either constructive or destructive outcomes is present in a controversy. Whether there are positive or negative consequences depends on the conditions under which controversy occurs and the way in which it is managed. These conditions and procedures include:

1. The goal structure within which the controversy occurs.
2. The heterogeneity of participants.
3. The amount of relevant information distributed among participants.
4. The social skills of participants.

Cooperative Goal Structure

Deutsch (1973) emphasizes that the context in which conflicts occur has important effects on whether the conflict turns out to be constructive or destructive. There are two possible contexts for controversy: cooperative and competitive. A cooperative context facilitates constructive controversy and a competitive context promotes destructive controversy in several ways (Johnson & Johnson, 1983):

1. In order for controversy to be constructive, information must be accurately communicated. Communication of information is far more complete, accurate, encouraged, and utilized in a cooperative context than in a competitive context (Johnson, 1974).

2. Constructive controversy requires a supportive climate in which group members feel safe enough to challenge each other's ideas. Cooperation provides a far more supportive climate than competition (Johnson & Johnson, 1991).

3. In order for controversy to be constructive, it must be valued. Cooperative experiences promote stronger beliefs that controversy is valid and valuable (Johnson, Johnson, & Scott, 1978; Lowry & Johnson, 1981; Smith, Johnson, & Johnson, 1981).

4. Constructive controversy requires dealing with feelings as well as with ideas and information. There is evidence that cooperativeness is positively related and

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competitiveness is negatively related to the ability to understand what others are feeling and why they are feeling that way (Johnson, 1971; 1975a, 1975b).

5. How controversies are defined has a great impact on how constructively they are managed. Within a competitive context controversies tend to be defined as "win-lose" situations (Deutsch, 1973).

6. Constructive controversy requires a recognition of similarities between positions as well as differences. Group members participating in a controversy within a cooperative context identify more of the similarities between their positions than do members participating in a controversy within a competitive context (Judd, 1978).

Evidence supports the argument that a cooperative context aids constructive controversy. Tjosvold and Johnson (1978) found that when the context was cooperative there was more open-minded listening to the opposing position. When controversy occurred within a competitive context, a closed-minded orientation was created in which individuals comparatively felt unwilling to make concessions to the opponent's viewpoint, and closed-mindedly refused to incorporate any of it into their own position. Within a competitive context the increased understanding that resulted from controversy tended to be ignored for a defensive adherence to one's own position. Van Blerkom and Tjosvold (1981) found that participants in a controversy within a cooperative context sought out individuals with opposing opinions to test the validity of their ideas and reap the benefits of controversy, while participants in a controversy within a competitive context attempted to strengthen their opinions either by choosing a more competent partner with the same opinion or a less competent discussant with an opposing view. Tjosvold and Deemer (1980) and Tjosvold (1982) found that **controversy within a cooperative context** induced (a) feelings of comfort, pleasure, and helpfulness in discussing opposing opinions; (b) expectations of the other being helpful; (c) feelings of trust and generosity towards the opponent; (d) uncertainty about the correctness of the opponent's position; (e) motivation to hear more about the opponent's arguments; (f) more accurate understanding of the opponent's position; and (g) the reaching of more integrated positions where both one's own and one's opponent's conclusions and reasoning are synthesized into a final position. **Controversy within a competitive context** promoted closed-minded disinterest and rejection of the opponent's ideas and information. **Avoidance of controversy** resulted in little interest in or actual knowledge of opposing ideas and information and the making of a decision that reflected one's own views only. Within a competitive context, however, Lowin (1969) and Kleinhesselink and Edwards (1975) found that when individuals were unsure of the correctness of their position, they selected to be exposed to disconfirming information when it could easily be refuted, presumably because such refutation could affirm their own beliefs.

In a series of studies, Dean Tjosvold and his associates studied the impact of cooperative and competitive contexts on controversy (Tjosvold, 1995). They found that controversy within a competitive context promoted closed-minded disinterest and rejection of the

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opponent's ideas and information, a refusal to incorporate any of the opponents' viewpoints into one's own position, and a defensively adherence to one's own position. When competitors were unsure of the correctness of their position, they selected to be exposed to disconfirming information when it could be easily refuted, presumably because such refutation affirmed their own beliefs. Avoidance of controversy resulted in little interest in or actual knowledge of opposing ideas and information and the making of a decision that reflected one's own views only. Within a cooperative context, controversy induced feelings of comfort, pleasure, and helpfulness in discussing opposing positions, an open-minded listening to the opposing positions, motivation to hear more about the opponent's arguments, more accurate understanding of the opponent's position, and the reaching of more integrated positions where both one's own and one's opponent's conclusions and reasoning are synthesized into a final position.

Heterogeneity Among Members

Differences among individuals in personality, sex, attitudes, background, social class, reasoning strategies, cognitive perspectives, information, ability levels, and skills lead to diverse organization and processing of information and experiences, which, in turn, begin the cycle of controversy. Such differences have been found to promote achievement and productivity (Fiedler, Meuwese, & Conk, 1961; Frick, 1973; Johnson, 1977; Torrance, 1961; Webb, 1977). The greater the heterogeneity among individuals, the greater the amount of time spent in argumentation (Nijhof & Kommers, 1982). Heterogeneity among individuals leads to potential controversy, and to more diverse interaction patterns and resources for achievement and problem-solving.

Distribution of Information

If controversy is to lead to achievement, individuals must possess information that is relevant to the completion of the tasks on which they are working. The more information individuals have about an issue, the greater their achievement and successful problem solving tends to be (Goldman, 1965; Laughlin, Branch, & Johnson, 1969). Having relevant information available, however, does not mean that it will be utilized. Individuals need the interpersonal and group skills necessary to ensure that all individuals involved contribute their relevant information and that the information is synthesized effectively (Hall & Williams, 1966; Johnson, 1977).

Skilled Disagreement

Controversy requires a complex set of procedures and skills that takes some time to master. When unskilled individuals who have no previous experience with the controversy process are required to engage in it, no advantage is expected. Susan Lund (1980), for example, in her PhD dissertation compared the effectiveness of the presence and absence of

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controversy and systematic evaluation on quality of decision making. Subjects were 154 graduate and undergraduate individuals at the University of Minnesota. They were randomly assigned to the four conditions and to groups from four to seven members within conditions. None of the subjects had previously participated in a structured controversy. The subjects participated in a one-hour experimental session in which they were instructed to follow the procedure of controversy or concurrence seeking or vigilant or nonvigilant decision-making behaviors. No significant differences on quality of decision making were found. She concludes that the one-hour time limit was too short for subjects to learn the procedures of controversy and skillfully engage in them.

In order for controversies to be managed constructively, individuals need a number of collaborative and conflict management skills (Johnson, 1990; Johnson & F. Johnson, 1991; Johnson, Johnson, & Holubec, 1991). One of the most important is to be able to **disagree with each other's ideas while confirming each other's personal competence**. Disagreeing with others, and at the same time imputing that they are incompetent, tends to increase their commitment to their own ideas and their rejection of one's information and reasoning (Tjosvold, 1974). Tjosvold, Johnson, and Fabrey (1980) and Tjosvold, Johnson, and Lerner (1981) found that when individuals involved in a controversy had their personal competence disconfirmed by their opponent, a closed-minded rejection of the opponent's position, information, and reasoning resulted. The amount of defensiveness generated influenced the degree to which individuals incorporated the opponent's information and reasoning into their position, even when they understood accurately their opponent's position. Disagreeing with others while simultaneously confirming their personal competence, however, results in being better liked and in the opponents being less critical of one's ideas, more interested in learning more about one's ideas, and more willing to incorporate one's information and reasoning into their own analysis of the problem (Tjosvold, Johnson, & Fabrey, 1980; Tjosvold, Johnson, & Lerner, 1981).

Another important set of skills for exchanging information and opinions within a controversy is **perspective taking**. More information, both personal and impersonal, is disclosed when one is interacting with a person engaging in perspective-taking behaviors such as paraphrasing to demonstrate understanding and communicating the desire to understand accurately. Perspective-taking ability increases one's capacity to phrase messages so that they are easily understood by others and to comprehend accurately the messages of others. Engaging in perspective taking in conflict situations tends to increase understanding and retention of the opponent's information and perspective; facilitate the achievement of creative, high quality problem solving; and promote more positive perceptions of the information-exchange process, fellow group members, and the group's work (Falk & Johnson, 1977; Johnson, 1971, 1977). The greater the clarity of group members' understanding of all sides of the issues and the more accurate the assessment of their validity and relative merits, the more creative the synthesis of all positions in a controversy tends to be.

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