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The Origins and Consequences of Consensus Decision Making: A Test of the Social Consensus Model

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This study developed and tested the Social Consensus Model of group decision making. According to the model, group members who are extraverted, agreeable, conscientious, non-neurotic, and open to experience are likely to generate a relatively high rate of supportive communication, in turn leading to the group's voluntary adoption of the consensus decision rule. The model also holds that when group members voluntarily employ the consensus decision rule, they are likely to be satisfied with their decision, view the decision as representative of their own and other members' views, and perceive the decision-making process to be fair. In a laboratory simulation involving 50 zero-history groups of undergraduates, we found that group members' average scores on the extraversion, agreeableness, and openness personality factors all correlated positively with the rate at which they generated supportive communication, and that the rate of supportive communication correlated positively with the percentage of members who reported that the consensus decision rule had been used. In addition, the percent reporting consensus correlated positively with average ratings of satisfaction, self-representation, other representation, and fairness. All of these findings were consistent with the predictions of the Social Consensus Model, and they suggest that future research should take into account the emergent nature of group decision rules.

Small decision-making groups are so common in the United States that they can be found in almost any corner of society—from work groups in corporate headquarters, to juries in courthouses, to planning associations in neighborhoods. Despite their pervasiveness, however, there remain many enduring mysteries about how small group members communicate and make decisions. One underlying puzzle is the means by which groups decide *how* to reach a decision—that is, the process by which they arrive at a decision rule.

According to Johnson and Johnson (1997), the most commonly used group decision rule in the United States is majority rule—the method of choice in both large public assemblies and small governing boards. Within the subset of decision-making groups that use democratic procedures, however, majority rule has a rival—decision by consensus (Gastil, 1993). Research comparing the merits of these two decision rules is mixed: Most research has found that participants are more satisfied using consensus (see, e.g., Miller, Jackson, Mueller, & Schersching, 1987), although the impact of decision rules on the quality of group judgments remains unclear. Early research emphasized how the consensus decision rule, in comparison to majority rule, could promote a more deliberative process (Hare, 1980; Nemeth, 1977), although some critics have argued that the advantages of consensus pertain only to particular settings (Falk & Falk, 1981; Hare, 1980; Tjosvold & Field, 1983). In the past decade, some researchers have found additional evidence supporting the advantages of the consensus decision rule (Guarnaschelli, McKelvey, & Palfrey, 2000; Stasson, Kameda, Parks, Zimmerman, & Davis, 1991), but others have found that majority rule produces better outcomes (Feddersen & Pesendorfer, 1998; Kameda & Sugimori, 1993; Parks & Nelson, 1999).

Even if it has been established that consensus can produce more satisfying decisions, regardless of the merits of the decisions, per se, scholars know relatively little about *why* or *how* groups might adopt a consensus decision rule, as almost no published research has explored this question. A few investigators have explored how children come to understand the appropriateness of different decision rules (Kinoshita, 1989) and how such choices vary between individualistic and collectivist cultures (Mann, Radford, & Kanagawa, 1985). The only other exceptions are a study that explored the relationship between individual decision-making styles and decision rule selection (Sager & Gastil, 1999), a comparison of groups assigned particular decision rules with those not assigned any rules (Falk & Falk, 1981), and a study that tested whether groups change decision rules when given negative feedback (Nielsen & Miller, 1997).

To help fill this gap in the literature, the present study develops and tests the Social Consensus Model. We begin by laying the conceptual foundation for our model. We review the basic definitions of group decision rules and present a reconceptualization of these rules that recognizes them both as a product of member characteristics and interaction (Sager & Gastil, 1999) and as an influence on group outcomes (Miller, 1989). To understand the psychological and communicative origins of the consensus decision rule, we also review theory and research on the Big Five factor model of personality (McCrae & Costa, 1987) and supportive communication (Gibb, 1961).

With this foundation in place, we then present the Social Consensus Model. This model holds that group members who are extraverted, agreeable, conscientious, non-neurotic, and open to experience are likely to generate a relatively high rate of supportive communication, facilitating their group's use of the consensus decision rule. Consistent with past research, the model also claims that when group members employ the consensus decision rule, they are more likely to be satisfied with their decision, view the decision as representative of their own and other members' views and perceive the decision-making process to be fair. Following our treatment of the model and a review of research studies pertaining to it, we present the method and results of a study that tested the model using small decision-making groups. We conclude the essay by examining the practical and theoretical implications of the findings.

Theory and Research

Decision by consensus is but one of several group decision rules that members may use to reach a decision. These rules can be differentiated in terms of where they fall along an autocratic-participative continuum (Nielsen & Miller, 1992; Sager & Gastil, 1999). The group decision rules known as "decision by authority" and "decision by expert" lie at the autocratic end of the continuum; "decision by minority" and "decision by majority rule" occupy more central positions, and "decision by consensus" is located at the participative end of the continuum. Of particular relevance to the present study are the decision rules of consensus and majority rule, which, as previously mentioned, are the most commonly used democratic decision rules in the United States and are perceived by most people to be fair, normal, and appropriate (DeStephen & Hirokawa, 1988; Johnson & Johnson, 1997; Mansbridge, 1983; Nielsen & Miller, 1992, 1997).

There are two principal ways group members can make a decision by majority rule (Schein, 1969). The first method is to informally poll group members after they have had a chance to discuss the issue at hand. If a majority of members share the same opinion, then group members may assume that the majority's position has been adopted. The second method is to announce a proposed alternative and have members take a formal vote. If a majority of group members vote in favor of the proposed alternative, then it is adopted as the group's decision (Johnson & Johnson, 1997).

In defining consensus, it is helpful to distinguish between a "consensus outcome" and the "consensus decision rule" (Sager & Gastil, 1999). A *consensus outcome* refers to group members' unanimous agreement on a particular issue or course of action. The *consensus decision rule*, by contrast, is a complex, time-consuming social process during which members must reach full agreement prior to coming to a final decision (Gastil, 1993).

Decision by majority rule and consensus both are related to a number of other procedural norms and habits. Although a consensus discussion can drag on indefinitely if one or more group members continue to oppose the most popular proposal, majority rule can close a debate as soon as a majority is identified (except where special rules permit a minority to prolong debate, as with the filibuster provisions in the

U.S. Senate). In addition, majority rule discussions often lead to a clash between the two most widely supported positions, which may be customized through amendments, whereas consensus can require integrating every group member's preference into a coherent whole that can earn unanimous support.

Reconceptualizing Group Decision Rules

Traditional conceptions of group decision rules presume that a group's rule is predetermined through the group's or organization's by-laws. In this view, decision rules already are in place when a group forms; consequently, experimental manipulations of group decision rules are an ecologically valid approach to research (e.g., Davis et al., 1993; Miller et al., 1987). This presumption is mistaken in three respects.

First, although many official bodies and work groups have preset decision rules, many others do not. As Putnam and Stohl (1990) have stressed, researchers must recognize that outside the laboratory, small groups have diverse historical origins and changing norms. Newly formed groups often have the freedom to shape their decision-making process, and the selection of a decision rule is one of the most important choices they can make.

Second, groups may not reach full agreement on the decision rule that is in use. In informal, newly formed, or spontaneously assembled groups, there often is no preset specification of the decision rule. Oftentimes, in such groups, no decision rule is formally adopted during discussion and no official vote is taken to mark the group's arrival at a decision. Consequently, some members may believe that the decision was reached by consensus, while other members of the same group may believe that majority rule was employed. Even groups that formally adopt decision rules may not have full agreement on the rule in use. This ambiguity is more than a clerical error; it is a basic feature of modern democratic decision making. Deliberative democratic theory, for example, holds that a democratic body should aim to reach consensus but resort to majority rule when unanimity cannot be reached (Cohen, 1989; Gutmann & Thompson, 1996; Mansbridge, 1983). Thus, members in an amicable group might report that they generally use the consensus decision rule, even though majority rule is their official policy.

Finally, it sometimes is problematic to conceptualize democratic decision rules as procedures that are determined by persons outside of the group itself. Citizens who serve on a jury in a criminal case may perceive the consensus decision rule as appropriate because it was chosen through a legitimate political process (e.g., written into a state constitution). However, an experimentally manipulated decision rule lacks such precedent; thus, if one wishes to explore the relative impact of these decision rules, it is necessary to consider permitting groups to select their own decision rules. A study design that permits rule selection sacrifices the internal validity advantage of random assignment of decision rules, but it complements past research by examining the relative impact of rules that are chosen in a manner consistent with the democratic spirit of the rules themselves.

We argue that if small group researchers hope to understand the forces underlying decision rule selection, it is necessary to conceptualize decision rules as a social accomplishment—a structuring device that is produced and reproduced through social interaction (Giddens, 1984). From this perspective, group decision rules may be established through a diverse array of processes. For example, research by Parrish-Sprowl (2003) suggested that group members may appropriate decision rules from the general culture that surrounds them. Members may also choose particular decision rules based upon their group's by-laws or traditions. And, of course, decision rules may be adopted spontaneously in new organizations or subgroups within existing bodies. Our view of decision rules as a social accomplishment necessarily means looking at majority rule, consensus, and other rules not as treatment conditions to be *manipulated* experimentally but, rather, as intermediate or outcome variables to be *measured* in a laboratory simulation. In this initial study, we have chosen to examine particular member characteristics and types of social interaction that could promote the partial or complete adoption of the consensus decision rule in small groups.

The Big Five Factor Model of Personality

Personality is one of many individual difference variables thought to shape group interaction (Bales, 1950; Haslett & Ruebush, 1999). Even within the more limited set of studies on democratic group decision making, personality has been an important variable since the inception of modern social-psychological research (e.g., Lewin, Lippitt, & White, 1939). Personality traits are "relatively enduring predispositions to act or behave in a particular manner that have transituational significance" (Smith & Snell, 1996, p. 283). The perspective we take in this study flows from earlier work on group-level personality, such as that of Cattell (1948), who conceptualized the aggregated personalities of group members as forming a collective personality, which he called "group syntality." Since Cattell's work, researchers have conceptualized and measured group personality in many ways, and, in this study, we take the relatively common approach of averaging scores on a conventional individual-level personality inventory (Halfhill, Sundstrom, Lahner, Calderone, & Nielsen, 2005).

Modern personality research often deploys a general measure in early studies before narrowing down to more particular personality traits. Toward this end, McCrae and Costa (1987) grouped a wide array of personality traits into five broad clusters or "factors," which they referred to as the "Big Five." The Big Five has proven to be a valuable tool for measuring personality, even cross-culturally (McCrae, Costa, Del Pilar, Rolland, & Parker, 1998), and it also has shown its utility for studying group processes and outcomes (Barry & Stewart, 1997).

The first of the Big Five factors is extraversion versus introversion. McCrae and Costa (1987) conceptualized extraversion as a "lively sociability" (p. 87). They suggested that the following trait-descriptive adjectives capture the essence of this personality factor: "sociable, fun-loving, affectionate, friendly, and talkative" (p. 87).

Agreeableness versus antagonism is the second factor. McCrae and Costa (1987) suggested that this factor is most easily understood by characterizing antagonistic people, who "seem always to set themselves against others. Cognitively they are mistrustful and skeptical; affectively they are callous and unsympathetic; behaviorally they are uncooperative, stubborn, and rude" (McCrae & Costa, 1987, p. 88).

The third personality factor is conscientiousness versus undirectedness. McCrae and Costa (1987) pointed out that the word "conscientious" has two principal meanings: acting in accordance with one's conscience and acting in a meticulous, systematic, and thorough manner. They suggested that this third factor captures both of these meanings, as well as what Digman and Takemoto-Chock (1981) referred to as a "will to achieve."

Neuroticism versus emotional stability constitutes the fourth factor. McCrae and Costa (1987) asserted that negative affect lies at the heart of this factor, and they suggested that the following trait-descriptive terms exemplify this factor: "worrying, insecure, self-conscious, and temperamental" (p. 86). Neuroticism goes beyond the experience of negative affect to also include maladaptive behavior and cognition. For example, McCrae and Costa (1987) pointed out that those individuals with high neuroticism scores may be more likely to hold faulty beliefs and to exhibit nonproductive coping strategies—thoughts and behaviors that often go hand in hand with negative affect.

The final personality factor in the Big Five is openness versus closedness to experience. In an earlier study, McCrae and Costa (1985) reconceptualized Norman's (1963) fifth factor—culture—as openness to experience. According to McCrae and Costa (1987), the following trait-descriptive terms are most representative of this factor: "original, imaginative, broad interests, and daring" (p. 87).

Supportive Communication

The Social Consensus Model holds that the Big Five personality factors influence group members' production of supportive communication messages. The nature of supportive communication can best be understood by contrasting it with defensive communication. Gibb (1961) defined defensive behavior "as that behavior which occurs when an individual perceives threat or anticipates threat in the group" (p. 141). According to Gibb, defensive communication behavior tends to elicit defensive listening. Such listening is characterized by a heightened state of arousal, which may make it difficult for the listener to concentrate on the speaker's message.

Supportive communication, on the other hand, tends to decrease members' defensive feelings (Gibb, 1961). According to Ellis and Fisher (1994), "Supportive communication occurs when members reinforce, support, and encourage one another" (p. 29). They described the type of group climate associated with members' use of supportive communication as follows: "The climate is one of expressing respect for others and indicating that you value their opinions. A supportive climate means that people are free to express themselves and feel comfortable communicating

with others'' (p. 29). Gibb characterized six forms of supportive communication: description, problem orientation (i.e., displaying a willingness to work *collaboratively* on problem definition and solution generation), spontaneity, empathy, equality, and provisionalism. In addition, he identified six corresponding forms of defensive communication: evaluation, control, strategy, neutrality, distancing, and certainty.

Hypotheses

Figure 1 summarizes how the Social Consensus Model of group decision making brings together the preceding theory and research. The model makes three major claims by linking personality to talk, talk to decision rule adoption, and decision rule to group outcomes. Although these have never been tested together, there is evidence warranting each part of the model.

Linking Personality Factors and Supportive Communication

In the first step along the theoretical pathway shown in Figure 1, group members' personality factors influence the rate at which they generate supportive communication. In effect, traits conducive to sociability and congeniality produce talk indicative of positive social relations. Consistent with this claim, a number of studies have found significant relationships between group members' personality characteristics and the extent to which they exhibit supportive communication and other conceptually similar forms of talk.
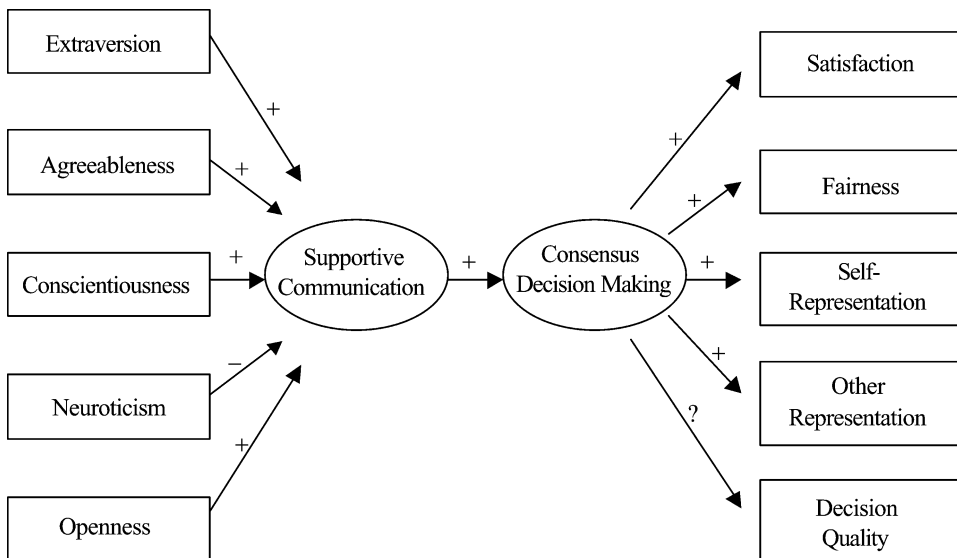
Figure 1   Illustration of the Hypothesized Relationships in the Social Consensus Model of Group Decision Making.

For example, researchers have discovered a positive relationship between participants' scores on the extraversion personality factor and their use of the following supportive communicative behaviors: empathy (Richendoller & Weaver, 1994), people-oriented listening (Weaver, Watson, & Barker, 1996), and interest in other group members (Sorensen & McCroskey, 1977). Based on these findings, we advance the following hypothesis:

> H_1a: There is significant positive correlation between a group's average score on the *extraversion* scale and the rate at which the group generates supportive communication.

Researchers also have discovered a positive relationship between participants' scores on the agreeableness personality factor and their use of two supportive communicative behaviors: genuineness (Vraa & Gerszewski, 1972) and prosocial behavior (Neuman, Wagner, & Christiansen, 1999). These findings provide the foundation for the next hypothesis:

> H_1b: There is significant positive correlation between a group's average score on the *agreeableness* scale and the rate at which the group generates supportive communication.

Neuman et al. (1999) found a positive relationship between participants' scores on the conscientiousness personality factor and their use of two supportive communicative behaviors: problem orientation and prosocial behavior. Their findings provide a rationale for the following hypothesis:

> H_1c: There is significant positive correlation between a group's average score on the *conscientiousness* scale and the rate at which the group generates supportive communication.

Researchers also have discovered that individuals with high scores on the neuroticism personality factor tend to exhibit low levels of prosocial behavior (George, 1990), high levels of small group communication apprehension (Weaver, 1998), high levels of tension during group interaction (Sorensen & McCroskey, 1977), and "a listening style that is punctuated by impatience and frustration" (Weaver et al., 1996, p. 386). These results suggest the plausibility of the next hypothesis:

> H_1d: There is significant negative correlation between a group's average score on the *neuroticism* scale and the rate at which the group generates supportive communication.

Finally, researchers have found a positive relationship between participants' scores on the openness personality factor and their use of two supportive communicative behaviors: problem orientation (Sorensen & McCroskey, 1977) and prosocial behavior (Neuman et al., 1999). We draw on these results to justify the following hypothesis:

> H_1e: There is significant positive correlation between a group's average score on the *openness* scale and the rate at which the group generates supportive communication.

Linking Supportive Communication and Consensus Decision Making

In the second step of the Social Consensus Model, we argue that group members' use of supportive communication promotes the adoption of the consensus decision rule. In other words, as supportive talk manifests an ethic of social harmony, it tends to lead the group to adopt a decision rule that facilitates or maintains a social consensus. This assertion is premised on the work of several group communication scholars who have suggested that supportive communication is a necessary but not sufficient condition to bring about consensus decision making. For example, Gastil (1993) suggested that supportive communication is an integral part of consensus decision making:

> Member relationships in consensus groups may be nurtured, because the relational aspects of small group democracy are the foundation of consensus. Individuality, competence, mutuality, and congeniality are historically associated with the use of consensus decision making, so it is more likely that consensus groups will direct energy toward maintaining a healthy relational atmosphere. (p. 52)

Similarly, Schein (1969) suggested that supportive communication forms the foundation of consensus decision making. He defined ''consensus decision making'' as ''a state of affairs where communications have been sufficiently open, and the group climate has been sufficiently supportive, to make everyone in the group feel that he has had his fair chance to influence the decision'' (p. 56). The work of other researchers (e.g., Avery, Auvine, Streibel, & Weiss, 1981; Gero, 1985; Sager & Gastil, 2002) also suggests that supportive communication is an essential component of consensus decision making.

Given the reconceptualization of decision rules advanced herein, these forces that promote consensus decision making may succeed only in degree, prompting some—but not necessarily all—group members to perceive the group as having adopted a consensus decision rule. Working with this conception of informal decision rule adoption, we advance the following hypothesis:

> H_2:   There is significant positive correlation between the rate at which a group generates supportive communication and the percentage of members within the group who report using consensus decision making.

Linking Consensus Decision Making and Group Outcomes

This chain from personality to decision rule is consequential because, ultimately, it shapes group outcomes. Numerous researchers have studied the effects of *assigned* group decision rules on a variety of outcomes, and we draw on this research in developing hypotheses about the likely outcomes associated with the *emergent* use of the consensus decision rule. We do not intend to equate hypothesized statistical associations between consensus decision making and eventual outcomes with causal claims: Other input and process variables could simultaneously influence both the adoption of the consensus decision rule and group outcomes. Nonetheless, it is valuable to test the claims derived from manipulated decision rules on groups that select their own

rules. At the very least, such research offers insight into the validity of past experimental results for groups with no assigned decision rule. In addition, this study might shed light on the complex relationship between group decision rule formation and outcomes.

Figure 1 depicts the model's hypothesized relationships between use of the consensus decision rule and group outcomes, but it is useful to explain briefly each of these connections. Past research has examined the relationship between the use of various decision rules and group members' satisfaction with both the group processes and their decisions. Because of the consensus decision rule's association with unanimity, some investigators, such as DeStephen and Hirokawa (1988), have gone so far as to conceptualize member satisfaction as a component of "small group consensus." When conceptually distinguished, however, researchers typically find strong empirical associations between these two variables (Hare, 1980; Kerr et al., 1976; Nemeth, 1977; Tjosvold & Field, 1983). For example, Kaplan and Miller (1987) found that even for different types of issues, discussion groups that made their decision by unanimity rule had significantly higher mean member satisfaction scores than did groups that made their decision by majority rule.

Miller (1989) offered the following explanation as to why group members tend to be more satisfied with decisions made by unanimity rule (or consensus) than decisions made by majority rule, authority rule, or expert rule: The principal determinant of a member's degree of satisfaction with his or her group's decision is the extent to which the member agrees with the decision. The percentage of members within a group who agree with their group's decision tends to be higher in groups that use the consensus decision rule than in groups that use majority rule, authority rule, or expert rule. It follows that group members should, on average, be more satisfied with a decision made by consensus than one made by majority, authority, or expert rule.

Several studies provide support for Miller's (1989) claim that a group member's degree of satisfaction with a group's decision is influenced by the extent to which he or she agrees with the decision. For example, Miller and Anderson (1979) investigated the effects of a confederate's opposition to the alternative preferred by the majority and three decision rules (dictatorship rule, majority rule, and unanimity rule) on group members' average level of satisfaction with the decision. They found that when the lone deviate was able to block the course of action preferred by the majority (e.g., when the confederate occupied the role of dictator), members' average level of satisfaction with the group's decision was significantly lower than when the lone deviate was unable to do so. In a similar study, Miller et al. (1987) found that members' satisfaction with their group's decision "depends mostly on agreement with the decision. It is relatively satisfying to get your way and relatively dissatisfying not to" (p. 330).

Logically extending these findings to our novel conceptualization of decision rule, it follows that the more group members perceive their decision rule as one based on consensus, the more likely they are to express satisfaction with the group decision. Thus, we hypothesize the following:

H₃a: There is a significant positive correlation between the percentage of members within a group who report using consensus decision making and the group's average level of satisfaction with the decision.

Two additional hypotheses derive from Miller et al.'s (1987) research on decision rules. In their study, Miller et al. went beyond satisfaction to look at whether group members perceived differences in the fairness or representativeness of consensus, majority rule, or dictatorial decision rules. Not surprisingly, participants rated the egalitarian decision rules as more fair and representative of their views, but Miller et al. also found that consensus was rated above majority rule on these measures. Their explanation for this finding was that group members perceive a decision-making process as fair and representative to the extent that it incorporates their preferences, and a requirement for members to reach consensus should, on average, better incorporate each individual's views. This leads to the following two hypotheses:

H₃b: There is a significant positive correlation between the percentage of members within a group who report using consensus decision making and the average fairness rating members assign to the group decision-making process.

H₃c: There is a significant positive correlation between the percentage of members within a group who report using consensus decision making and the average of members' ratings of the extent to which the group's decision represented their individual views.

To these three related hypotheses, we add a fourth. It is our contention that consensus is commonly perceived not only as personally satisfying, fair, and representative but also as a process that incorporates the views of *other* group members. A participant in a consensus group understands that the final decision must take into account his or her personal view along with the views of every other participant. Under majority rule, by contrast, a participant recognizes that his or her view may prevail and that minority viewpoints may be defeated. This difference also reflects the spirit of consensus, which often is designed as a tool for finding common ground rather than a way of voting to end a debate (Gastil, 1993). Thus, we advance the following hypothesis:

H₃d: There is a significant positive correlation between the percentage of members within a group who report using consensus decision making and the average of members' ratings of the extent to which the group's decision represented the views of fellow group members.

Finally, we move from satisfaction and fairness considerations to questions of actual group decision quality. Early experimental investigations emphasized how consensus, in comparison to other decision rules, could promote a more deliberative decision-making process in small groups (Hare, 1980; Nemeth, 1977). Subsequent studies tested the generalizability of this finding and found that consensus promotes superior discussion and decisions only in particular settings (Falk & Falk, 1981; Hare, 1980; Tjosvold & Field, 1983). Research has continued to explore the link between group decision rule and decision quality, primarily by examining the judgments of

mock juries; however, even with similar tasks, settings, and designs, studies continue to find contradictory evidence. Some research suggests the superiority of consensus (Guarnaschelli et al., 2000; Stasson, Kameda, Parks, Zimmerman, & Davis, 1991), whereas other studies have found that majority rule produces higher quality decisions (Feddersen & Pesendorfer, 1998; Kameda & Sugimori, 1993; Parks & Nelson, 1999).

The mixed findings of past studies make it difficult to predict whether the use of either decision rule will be positively related to decision quality. Moreover, the study presented herein examines a type of task—complex public policy problems—that is uncommon in this literature. Even in jury studies, decision quality typically is measured in relation to a definitive expert judgment (e.g., Guarnaschelli et al., 2000). Consequently, it is difficult to estimate the relative impact of majority rule and consensus on decision quality for this type of judgment task, where there is no single correct answer. Given the inability to make a prediction, the following research question was posed:

RQ$_1$:   What is the correlation, if any, between the percentage of members within a group who report using consensus decision making and the quality of the group's decision?

Method

Participants

A total of 160 female and 90 male undergraduate students from a large state university in the Pacific Northwest United States participated in the study. This sample included participants from the following ethnic categories: White, non-Hispanic (72%), Asian-American (21%), Hispanic (4%), and African-American (1%). Nearly all participants received extra credit for taking part in the study, with the remainder volunteering. The 250 participants were assigned to 57 groups, which ranged in size from 3 to 6. We randomly varied the size and gender composition of our groups in order to increase the generalizability of our findings: 13 of these groups had an equal number of males and females, 35 had a female majority, and 9 had a male majority. (As intended, group size and gender composition were neither correlated with each other nor with task assignment.)

Recall that one of the objectives of this study was to contribute to the ongoing debate about the relative impact of majority rule versus consensus. To achieve this end, we limited our statistical analysis to 50 of the original 57 groups; the 7 groups excluded from the analysis included members who believed that their group had used a decision rule other than consensus or majority rule. By excluding these groups, we were able to maintain a simple decision rule continuum, which ranged from members' unanimous agreement that majority rule had been used to members' unanimous agreement that the consensus decision rule had been employed. The final sample of 50 groups ($N = 216$ participants) provided adequate statistical power to detect moderate correlations ($r > .33$) with a one-tailed alpha set at .05 (Cohen, 1988).

Procedures

Once participants gave their consent to participate in the study, they were given a prediscussion questionnaire, which included five sets of bipolar adjective pairs—one for each of the Big Five personality factors (McCrae & Costa, 1987). After filling out the questionnaire, participants were randomly divided into small groups, and each group was escorted to its own room, which contained desks with chairs arranged in a circle. Once participants sat down, they were informed that they had a total of 60 minutes to complete a group decision-making task, which was described on a sheet of paper that had been placed face-down on the floor in the center of the circle. (Median discussion time was 50 minutes, with 90% of groups taking 30 minutes or longer.)

Each group was randomly assigned one of three group decision-making tasks (drug-related violent crime, environmental pollution, or the U.S. economy). All three tasks required group members to discuss a national public policy problem, to devise a solution to the problem, to write down the solution, and to estimate the percentage of U.S. Americans who would support the solution. As with group size and gender composition, the discussion issue was randomly varied to increase the generalizability of the results. (One may refer to groups completing such tasks as ''problem-solving groups,'' but since our focus is on the decision that the group must reach at the end of its labors, we refer to them as ''decision-making groups.'')

This set of discussion topics was selected to simulate a particular type of small decision-making group: the issues forum, citizen panel, or deliberative public meeting. As a representative microcosm of groups in the public sphere, such zero-history groups often shed light on public opinion and assist policymakers (Gastil & Levine, 2005).

After completing the group decision-making task, each participant filled out a postdiscussion questionnaire. This questionnaire included items concerning which decision rule the group had used to reach a decision, as well as questions regarding group outcomes.

Measures

The big five personality factors
The present study included measures for each of the Big Five personality factors described by McCrae and Costa (1987) and validated by Costa and McCrae (1985). Each personality factor scale consisted of seven bipolar adjective pairs from McCrae and Costa's (1985) 80-adjective-pair Big Five instrument along with 7-point Likert-type rating scales (see Table 1). Adequate reliabilities were found for each factor: Extraversion (Cronbach's alpha = .80), Agreeableness (alpha = .77), Conscientiousness (alpha = .77), Neuroticism (alpha = .71), and Openness (alpha = .66). Each participant's responses to the adjective pairs from each scale were averaged to produce five personality factor scores per group member.

In addition, each group member's scores on these five factors were averaged together with all other group members' scores to produce five average personality

Table 1   The Big Five Factor Instrument

Factor	Adjective pair
Extraversion	Retiring vs. sociable
	Sober vs. fun loving
	Reserved vs. affectionate
	Submissive vs. dominant
	Quiet vs. talkative
	Passive vs. active
	Loner vs. joiner
Agreeableness	Irritable vs. good natured
	Stingy vs. generous
	Ruthless vs. soft hearted
	Rude vs. courteous
	Callous vs. sympathetic
	Suspicious vs. trusting
	Vengeful vs. forgiving
Conscientiousness	Negligent vs. conscientious
	Careless vs. careful
	Lazy vs. hardworking
	Undependable vs. reliable
	Disorganized vs. well organized
	Quitting vs. persevering
	Impractical vs. practical
Neuroticism	At ease vs. nervous
	Relaxed vs. high-strung
	Hardy vs. vulnerable
	Secure vs. insecure
	Calm vs. worrying
	Self-satisfied vs. self-pitying
	Comfortable vs. self-conscious
Openness	Conventional vs. original
	Down to earth vs. imaginative
	Uncreative vs. creative
	Conforming vs. independent
	Narrow interests vs. broad interests
	Unadventurous vs. daring
	Uncurious vs. curious

Adapted from McCrae and Costa (1987, p. 85).

factor scores per group (see Halfhill et al., 2005). This procedure generated a set of five *group-level* scores: Extraversion ($M = 5.16$, $SD = .35$), Agreeableness ($M = 5.38$, $SD = .44$), Conscientiousness ($M = 5.40$, $SD = .42$), Neuroticism ($M = 3.09$, $SD = .42$), and Openness ($M = 4.86$, $SD = .31$).

Supportive communication

Alexander (1973a, 1973b) devised the Defensive and Supportive Communication (DSC) Interaction Coding System, which allows an observer to classify verbal and nonverbal messages into four categories of defensive communication (i.e., judgmental-dogmatism, control and strategy, indifference, and superiority) and four categories of supportive communication (i.e., general information seeking/giving, spontaneous problem solving, empathic understanding, and equality). The DSC Interaction Coding System has its origins in the work of Gibb (1961), and past research using this system has established its discriminant and convergent validity (Waldron, Turner, Alexander, & Barton, 1994) and reliability (Alexander, 1973a).

The DSC Interaction Coding System was used in the present study to code for instances of supportive (versus other forms of) communication expressed during the group discussions. All of the discussions were recorded using wall-mounted video cameras or camcorders. The videotapes of the group discussions were transcribed by undergraduate students. Then, two communication graduate students, working independently, read each group's transcript and coded individual speaking turns for the presence of supportive messages. Taking this approach, a given speaking turn could contain one or more of the four subtypes of supportive messages, one or more of the four subtypes of defensive messages, or a combination of supportive and defensive messages. For each coder, we computed the percentage of speaking turns within a group transcript that the coder judged to be purely supportive in nature (i.e., the speaking turns contained only supportive messages), without regard to the subtypes of supportiveness. For each group, we averaged together the two coders' percentages of purely supportive speaking turns, which generated a mean percentage of supportive communication. Given our focus on group-level data and aggregation of the different subtypes of supportiveness, we estimated reliability by calculating the correlation between the two judges' group supportiveness scores (alpha = .75).

We further reasoned that a stream of relatively supportive communication would promote the use (and perception) of consensus decision making. To measure this stream, we divided each group's supportive communication score by the duration (in minutes) of each group's discussion. We labeled this variable Rate of Supportive Communication, which ranged in value from 1.13 to 3.83 ($M = 1.86$, $SD = .61$).

Group decision rules

Participants indicated on the postdiscussion questionnaire whether they thought their group had made its decision using the expert, authority, majority, or consensus

decision rule. Each participant selected from among the following four choices the one decision rule that best described how the group had arrived at a decision:

(1) My group made decisions by having the most knowledgeable group member make decisions *for* us.
(2) My group made decisions by simply doing whatever the most powerful group member said we should do.
(3) My group made decisions by "majority rule"; if a majority of group members agreed on a decision, it was final.
(4) My group made decisions by "consensus"; every one of us had to agree on a decision before it was final.

A preliminary analysis of the data indicated that 7 out of our 57 groups contained at least one member who had selected the first or second response to this item. To shed light on the relative effects of using consensus versus majority rule, we excluded from the statistical analysis these seven groups. For the remaining 50 groups, we calculated the percentage of members within each group who reported that their group had made its decision by consensus. We labeled this variable Percent Consensus ($M = 72.33$, $SD = 28.46$).

Satisfaction, fairness, and representation

Postdiscussion member perceptions were measured using adaptations of the single-item Likert scales employed by Miller et al. (1987). For instance, the postdiscussion questionnaire asked participants to "indicate your overall satisfaction with your group's decision." This item was accompanied by a 10-point, Likert-type scale with three semantic anchors (0 = "Not at all Satisfied," 5 = "Somewhat Satisfied," and 10 = "Extremely Satisfied"). Within each group, all members' scores on this item were averaged together to produce a group-level variable called Satisfaction ($M = 7.74$, $SD = 1.19$).

Similar 10-point scales were included to measure group members' perceptions of the decision-making process. To measure procedural fairness, participants were asked to "rate the fairness of the process your group used to arrive at its decision" (Fairness $M = 8.46$, $SD = .99$). To assess self-representation, participants were asked to respond to the following question: "How well did your group's decision represent your own views regarding [the issue discussed]?" (Self-Representation $M = 7.07$, $SD = 1.07$). To gauge other representation, participants responded to the following item: "Given the different views that you and your fellow group members held regarding [the issue discussed], how well do you think the group's final decision represented the group members' views?" (Other Representation $M = 7.75$, $SD = 1.18$).

Decision quality

The quality of group decisions was measured using external judges, who read the written group decisions without having viewed the group discussions. Using

Leathers' (1972) Productivity Rating Instrument (PRI) adapted for public policy judgments, three independent judges rated each of the group policy recommendations on five Likert-type decision quality scales, with each scale ranging from 1 (low quality) to 7 (high quality). Each group's scores on the five scales were arrived at by averaging together the three judges' ratings. The scores on these five scales then were averaged together to determine each group's overall rating of Decision Quality ($M = 4.06$, $SD = .84$). The inter-rater reliability obtained using Ebel's (1951) intraclass procedure was .87.

Results

To test our hypotheses, correlations were calculated with one-tailed (directional) alpha set at .05. The first set of hypotheses concerned the relationships between the Big Five personality factors and supportive communication. Hypotheses 1a, 1b, and 1e received support, as there were significant positive correlations between the rate at which a group generated supportive communication and the group's average scores on the Extraversion, $r = .29$, $p = .021$, Agreeableness, $r = .32$, $p = .013$, and Openness, $r = .27$, $p = .032$, personality factors. Hypotheses 1c and 1d, however, received no support, as there were no significant positive correlations between the rate at which a group generated supportive communication and the group's average scores on the Conscientiousness, $r = .17$, $p = .116$, and Neuroticism, $r = -.08$, $p = .294$, personality factors. The results were in the predicted directions, but given the statistical power of our test, it is unlikely that those factors have even moderate-sized relationships with supportive communication.

Hypothesis 2 addressed the relationship between supportive communication and consensus decision making. This hypothesis received support, as there was a significant positive correlation between the rate at which a group generated supportive communication and the percentage of members within the group who reported consensus decision making, $r = .30$, $p = .019$.

The last set of hypotheses concerned the relationships between consensus decision making and group outcomes, and all were supported. There were significant positive correlations between the percentage of members within a group who reported consensus decision making and the average of members' ratings of Satisfaction, $r = .47$, $p < .001$, Fairness, $r = .39$, $p = .003$, Self-Representation, $r = .48$, $p < .001$, and Other Representation, $r = .35$, $p = .006$.

Finally, with regard to the research question, no significant correlation was found between the percentage of members within a group who reported consensus decision making and the average of observers' ratings of Decision Quality, $r = -.10$, $p = .482$. (A two-tailed alpha was employed for this final test because it was a nondirectional research question.)

One way to summarize these results is to present them in the form of a path analysis. With any sample smaller than 100 cases, it would be unwise to make a full structural equation model the primary means of analysis (Kline, 2005), but a simple
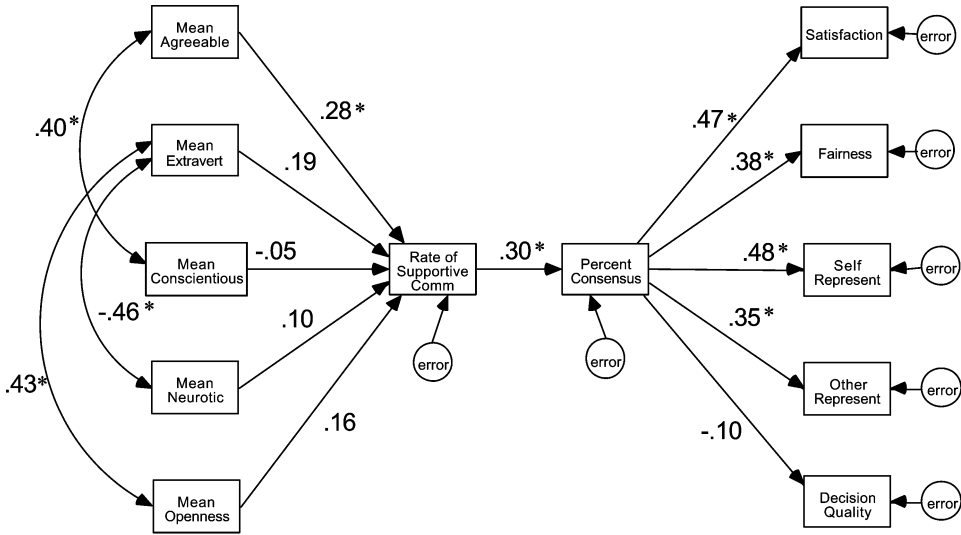
*p < .05. Model fit statistics: χ^2 = 216, *df* = 52, *p* < .001.

Figure 2 Path Analytic Summary of the Relationships Among Personality Factors, Supportive Communication, Percent Consensus, and Outcome Ratings.

path-analytic representation of our basic model provides a useful illustration (rather than an additional test) of the main findings.

Figure 2 shows all of the relationships described in Hypotheses 1–3, plus the research question and the statistically significant connections within the set of five personality variables, $\chi^2 = 216$, $df = 52$, $p < .001$. This model simultaneously calculates the associations among all four levels of variables—personality, supportive communication, decision rule agreement, and outcomes. The relationships essentially are the same, although agreeableness is the only personality factor to have a significant path to supportive communication, $b = .28$, $p = .049$. Nonetheless, the absence of direct effects from openness and extraversion clearly is due to their strong covariance, $b = .43$. In sum, the path analysis suggests the robustness of the correlational results and highlights the interconnections among selected personality factors in these data.

Discussion

The traditional perspective on group decision rules assumes that a group's rule is preset by group or organizational guidelines. Decision rule adoption may be formalized in by-laws and regulations, but often it remains unspecified in both informal groups and newly formed formal groups. Even in those groups with official democratic decision-making rules, there often is a tension between the majoritarian and consensual democratic impulses (Cohen, 1989; Gutmann & Thompson, 1996; Mansbridge, 1983), and this can translate into uncertainty about which rule is appropriate or in use from one moment to another. Furthermore, it sometimes is problematic to

conceptualize democratic decision rules as procedures that are determined by persons outside of the group itself.

To address these issues, we reconceptualized group decision rules as socially constructed phenomena that are produced and reproduced in ongoing interaction among group members (Giddens, 1984). Building on this conceptual foundation, we devised the Social Consensus Model of group decision making and tested the model using small decision-making groups.

Personality and Supportive Communication

The results showed that the rate at which a group generated supportive communication was positively associated with members' average scores on three of McCrae and Costa's (1987) Big Five personality factors: agreeableness, extraversion, and openness. People who are courteous, trusting, and sympathetic (agreeable), thus, seem more inclined to offer verbal support to their fellow group members than are their less agreeable counterparts. Extraversion and openness were highly correlated factors, and it may be fruitful to interpret them as having a joint effect, whereby supportive communication flows more often from group members who are interested in actively participating in new discussions, making original contributions to a conversation, and forming new social relationships.

Consistent with the approach taken by many modern personality researchers, we developed the initial model of the origins and consequences of consensus decision making using a general measure of personality—the Big Five factors. In Cohen's (1988) terminology, we found a pattern of "moderate" effect sizes linking this general measure of personality to supportive communication (and subsequently to decision rule and outcomes). The next logical step flowing from our findings is to investigate the extent to which the more specific communication traits subsumed by the agreeable/extraverted/open cluster are related to the production of supportive messages and to decision rule adoption. These communication traits include tolerance for ambiguity, emotional expressiveness, a collaborative conflict orientation, and low communication apprehension (Haslett & Ruebush, 1999; Keyton & Frey, 2002).

Supportive Communication and Consensus

In support of the Social Consensus Model, the results also showed a positive association between the rate at which a group generated supportive communication and the percentage of members within the group who believed that their group had employed the consensus decision rule. This finding suggests the difficulty of divorcing the consensus decision rule from the more broadly defined consensus discussion process (Gastil, 1993). That is, our findings suggest that the *consensus decision rule* flows from a supportive, one might say *consensus-building*, discussion process. Whereas majority rule may be the default decision rule for most groups (Johnson & Johnson, 1997), a pattern of supportive communication may—even over a short

period of time for newly formed groups—establish consensus as the group's decision rule in the minds of many—if not all—group members.

Decision Rule and Group Outcomes

Finally, the results of this study showed that the percentage of members within a group who reported consensus decision making was positively associated with members' average ratings of satisfaction, self-representation, other representation, and fairness. There was, however, no statistically significant association between perceptions of the group decision rule and observer-rated decision quality.

One of the objectives of developing and testing the Social Consensus Model was to contribute to the ongoing debate about the relative efficacy of majority rule versus consensus. Based on the findings of Miller (1989) and Miller et al. (1987), as well as the results reported here, it appears that relative to majority rule, group members are more satisfied with decisions arrived at through a consensus process, and they associate the consensus decision rule with higher levels of procedural fairness, better integration of their views, and superior representation of the views of other group members. This study, thus, extends previous research by showing that these effects hold not only for experimentally manipulated decision rules but also for voluntarily adopted decision rules.

Decision quality, however, was not so clearly related to emergent decision rule. Future research aimed at connecting group decision rule to decision quality should investigate additional variables that have the potential to interact statistically with group decision rule to influence decision quality. Taking this approach, researchers could identify the different circumstances under which one decision rule or the other might produce higher quality decisions.

Study Limitations and Future Research

Although the study revealed some important findings about the origins and consequences of consensus decision making, these findings need to be interpreted in light of a number of limitations. One limitation of this investigation is that the decision rule that each group used to reach a decision was measured by aggregating members' judgments concerning how the decision was made. In future studies, trained observers could review transcripts of group discussion, and identify more objectively which decision rule each group followed. These observations should still be paired with self-reports, however, lest the observers may fail to recognize the uncertainty group members feel regarding ambiguous or shifting decision rules.

In addition, even when studying zero-history groups, it may be fruitful to set up the study to create the appearance of likely future interaction—or prepare an actual series of interactions. The appearance of future interaction alone could raise the stakes for decision rule selection, and repeated interactions could test the stability of emergent decision rules over time. Even in this study, however, groups took their task seriously, with a majority of groups using nearly all of their allotted time and

many groups rushing to finish by the one-hour deadline. The transcripts of group discussions also revealed lively debates and serious focus on the task for the overwhelming majority of groups.

Those wishing to focus on more natural group settings could study newly forming groups embedded within ongoing associations or organizations. Presumably, the larger contexts in which these groups emerge and operate (Putnam & Stohl, 1990) will influence their decision rule choices, but we suspect that even where a formal decision rule exists in bylaws, different patterns of communication will create different perceptions of the degree to which consensus or any other rule is the group's decision rule.

Conclusion

A clearer picture is now emerging of the personality characteristics and communication processes that are associated with consensus group decision making. Future research will shed more light on how different decision rules emerge and are sustained or changed over time in small groups. At this point, it is a step forward to recognize that groups do not just make decisions—they also make decision rules.

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