

THE EFFECTS OF CONSCIENTIOUSNESS AND OPPORTUNITY TO CAUCUS ON GROUP PERFORMANCE

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Given the increasing use of work teams in organizations, personnel selection procedures based on individual conscientiousness are likely to result in groups composed of highly conscientious members. This laboratory experiment examined the performance of groups of either high or low conscientious individuals, with the groups being given more (caucus condition) or less (no caucus condition) opportunity to develop performance norms. Groups of high-conscientious individuals given the chance to caucus were less productive than such groups that were not given the opportunity to caucus and less productive than groups of low-conscientious individuals given the chance to caucus. These findings are explained in terms of the development of quality norms by the high-conscientious caucus groups at the expense of productivity.

The personality trait conscientiousness consists of six facets (Costa, McCrae, & Dye, 1991): competence (i.e., capable, responsible, and accomplished), order (i.e., the tendency to keep one's environment tidy and well organized), dutifulness (i.e., strict adherence to standards of conduct), achievement striving (i.e.,

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striving for excellence), self-discipline (i.e., persistence, the ability to continue with a task despite boredom or other distractions), and deliberation (i.e., caution, planning, and thoughtfulness). Conscientiousness has been found to be a useful predictor of job performance, with high-conscientious employees outperforming those lower in conscientiousness across a variety of job types (e.g., Barrick & Mount, 1991; Schmidt & Hunter, 1992). This superior performance of high-conscientious individuals is thought to be due largely to high and persistent effort exertion (e.g., Barrick & Mount, 1991).

Given the increasing usage of autonomous work groups, project teams, quality circles, and the like, personnel selection procedures based on individual conscientiousness may well lead to situations in which work groups are composed of highly conscientious members. However, little is known about the performance of groups of highly conscientious people. The purpose of the present study is to examine the performance of groups composed of either high- or low-conscientious members.

Conscientiousness is expected to affect group performance through the development of group norms. Thus, in addition to group composition, the degree to which groups were given an opportunity to develop performance norms was manipulated. Group norms are "informal rules that groups adopt to regulate and regularize group member behavior" (Feldman, 1984, p. 47). Although norms play an important role in determining group productivity, the relationship between group norms and productivity may be positive or negative. Norms may develop suggesting that decreased performance is acceptable or that increased performance is expected.

The opportunity to develop performance norms was controlled by allowing half of the groups to caucus to develop performance strategies and plans, whereas the other half was not given the opportunity to caucus, reducing the opportunity to develop performance norms. The opportunity to caucus allows group members to discover one another's past effort and performance and to discuss future effort and performance strategies. Such group interactions are expected to affect norm formation so that, during the caucus

periods, groups composed of high-conscientious individuals will discover high and persistent effort exertion among their members, resulting in even greater subsequent effort exertion (e.g., Tziner & Eden, 1985). Thus, for high-conscientious groups, those given the opportunity to caucus should perform at higher levels than those without the opportunity to caucus. In contrast, for low-conscientious groups, those given the opportunity to caucus will respond with a similar, or even lower effort level than those without the opportunity to caucus.

METHOD

PARTICIPANTS

One hundred and twenty students from a metropolitan midwestern university participated, in partial fulfillment of an introductory psychology course requirement. Half of the participants were female.

TASK

Groups are often formed to advise organizational decision makers (Dennis & Valacich, 1994; Hackman & Kaplan, 1974), making the generation of ideas an important group activity. Given the importance of group idea generation, an alternate uses task was selected, requiring participants to name various uses for a common object. The method has been employed in numerous studies (e.g., Harkins & Jackson, 1985; Szymanski & Harkins, 1987), typically using *knife* as the target word. In the present study, participants completed multiple trials of the task such that three target objects, eliciting approximately the same number of alternate uses, served as stimuli. Pilot work identified *knife*, *plastic trash bag*, and *brick* as target objects yielding about the same number of alternate uses.

Participants completed tasks with all three stimuli randomly ordered by experimental sessions.

PROCEDURE

A 2×2 research design was employed, with group conscientiousness composition (high/low) and explicit opportunity to develop group norms (caucus/no caucus) as independent variables. Group composition was based on conscientiousness scores and consisted of two combinations of participants: three high- or three low-conscientious individuals.

The Goldberg (1992) 100 Adjective Checklist was administered to 670 students. Twenty of the 100 items of the checklist pertained to the conscientiousness factor. The 20 items exhibited an acceptable level of reliability ($\alpha = .91$).

Students scoring in the top 30% of the conscientiousness distribution were eligible to participate in the high-conscientious condition; those in the bottom 30% of the distribution, in the low-conscientious condition. From the list of eligible participants, students were telephoned to fill sessions of homogeneously high- or low-conscientious members and homogeneously male or female groups. Uniformly male and female groups were formed to preclude group gender composition effects. Given that only one fifth (20 items) of the 100 checklist items related to conscientiousness and that participants completed the checklist a minimum of several weeks prior to experimental participation and were unaware of the experimental selection criteria, the potential for reactivity effects was minimal. Furthermore, the experimenter did not schedule sessions, and thus was blind to the group composition condition.

Participants were told that they were to work as a group to try to generate as many uses as possible in 5 minutes. They were instructed not to be concerned with the quality of the uses and were told that the uses could be ordinary or unusual. Each participant stated aloud the alternate uses that came to mind, and the uses that

were generated were recorded on a work sheet. The alternate uses task was repeated three times.

Half of the experimental sessions were randomly assigned to the caucus condition, the other half to the no caucus condition. Trial 1 served as a practice trial. After each of the Trials 1 and 2, group members in the caucus condition were told to discuss previous task performance for 5 minutes. They were told that they could discuss specific strategies for thinking of new uses, how much effort they exerted, or how much effort they planned to exert in the next trial. Participants were instructed not to discuss particular uses for the items generated in the previous trial.

For the no caucus condition, participants individually completed a different word search task during each of the two 5-minute breaks, corresponding to the 5-minute caucus period in the caucus condition. They were told that there would be a 5-minute delay in the experiment while the experimenter prepared materials for the next section and that during the delay, they would individually complete a word search task that required them to find and circle words hidden in a word maze. The task occupied the full 5-minute period and was sufficiently different from the experimental task to guard against performance reactivity on the experimental task.

At the end of the experiment, participants individually completed a questionnaire containing the manipulation check and norm development measure. The manipulation check for caucus was assessed by this item: I felt that I had an opportunity to discuss performance on the tasks with the other group members. Participants responded using a 7-point Likert-type scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*.

Responses to the following three items were summed to form an overall norm development score: "I believe that our group was able to reach some type of understanding about how much effort we were willing to put into the task"; "My group developed strategies for generating alternate uses for the task"; "The group discussions influenced my performance on the task." Participants responded using the aforementioned 7-point agreement scale. The alpha reliability for the three items was .60. For each trial, group productivity

was defined as the number of uses agreed on and recorded by the group.

RESULTS

As expected, a significant difference was found for the opportunity to discuss performance, $t(38) = 8.86, p < .01$, with a caucus mean of 6.12 ($SD = .99$) and a no caucus mean of 3.13 ($SD = 1.14$). Due to the interactive nature of the task, those in the no caucus condition had the opportunity to develop performance norms during task completion. Despite this, the caucus manipulation had the desired effect of increasing the strength of the norms that developed in the caucus groups, $t(38) = 2.37, p < .05$, such that those in the caucus condition ($M = 4.80, SD = 1.09$) reported a significantly higher amount of norm development than the no caucus condition ($M = 4.03, SD = .96$).¹

An analysis of variance (ANOVA) was used to test for a Caucus \times Conscientiousness interaction. Combined group performance on Trials 2 and 3 was the dependent variable. Nonsignificant composition, $F(1, 39) = .71, p > .05$, and caucus, $F(1, 39) = .09, p > .05$, main effects were found. The performance mean for the low-conscientious condition was 95.00 ($SD = 38.61$); for the high-conscientious condition, 83.75 ($SD = 49.88$); for the no caucus condition, 91.40 ($SD = 48.18$); and for the caucus condition, 87.35 ($SD = 41.41$).

As predicted, a significant interaction, $F(1, 39) = 6.45, p < .01$, between group conscientiousness and opportunity to caucus was found. However, the form of the interaction was in a direction opposite to that predicted. As depicted in Figure 1, the caucus condition had a significant positive impact on performance for low-conscientious groups and a significant negative impact for high-conscientious groups.

To illuminate these unexpected findings, performance quality was examined. Practicality was used as an index of quality and refers to whether the target object could be used in the manner suggested (e.g., using a brick to keep bread warm is practical, whereas

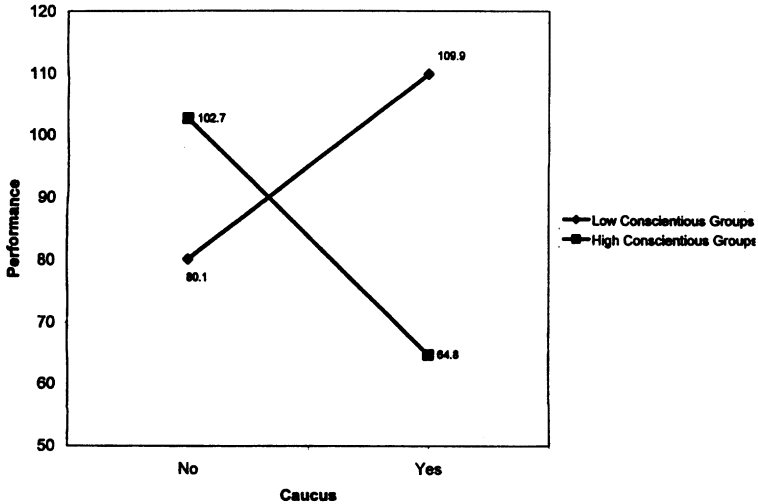


Figure 1: Interaction Between Caucus and Group Composition, Predicting Group Performance

using a brick to make soup is not). The uses generated by each group for each trial were scored by two raters who were blind to the experimental condition and who had no direct contact with the participants. Uses were rated for overall practicality (interrater reliability for Trial 1, $r = .86$; Trial 2, $r = .93$; and Trial 3, $r = .94$), using a 7-point scale with low numbers indicating few practical uses and high numbers, mostly all practical uses. The two ratings were averaged for each group to form a practicality index. For Trial 1, the mean quality rating was 5.85 ($SD = .79$); for Trial 2, 5.85 ($SD = .97$); and for Trial 3, 5.59 ($SD = 1.10$).

Table 1 presents a correlation matrix of group conscientiousness, performance quality (i.e., practicality), and performance quantity. In general, as the quantity of uses increased, overall practicality decreased (for Trials 1, 2, and 3, respectively, $r = -.54$, $-.65$, $-.59$). Also, a significant relationship was found for group

conscientiousness and practicality (for Trials 1, 2, and 3, respectively, $r = .42, .48, .40$).

Regardless of opportunity to caucus, high-conscientious groups produced more practical uses than low-conscientious groups. High-conscientious groups concentrated on the quality (i.e., practicality) of uses at the expense of quantity, whereas low-conscientious groups did the opposite. These results suggest that the opportunity to caucus led low-conscientious groups to form norms of performance *quantity*, and high conscientious groups to form norms of performance *quality*.

DISCUSSION

Some support was found for the role of norms in the group conscientiousness-performance relationship. However, when given opportunities to develop explicit norms during caucus periods and during task performance, low-conscientious groups performed at higher levels than high-conscientious groups. These unexpected results are explained by an emphasis on performance quality during task completion by the high-conscientious groups, which depressed performance quantity.

The directions of the brainstorming tasks explicitly emphasized performance quantity, rather than quality (e.g., "Think of as many uses as possible . . ."). Thus, the high-conscientious groups without an opportunity to caucus, and the low-conscientious groups with an opportunity to caucus, more closely followed directions. Based on excerpts from the caucus periods, it became evident that the high-conscientious group members were inhibiting their own and each other's performance. Individuals would negatively comment on uses generated by others (e.g., "You couldn't really use a brick for that"; "That's not a very good use"). Due to the opportunity to develop explicit as well as implicit quality norms, the inhibitory comments were made not only during task performance, but also during the caucus periods, thus strengthening their impact. The high-conscientious group members restricted each other's (as well

TABLE 1: Correlation Matrix of Group Conscientiousness, Group Performance Quantity, and Group Performance Quality

	1	2	3	4	5	6	7
1. Conscientiousness	1.00						
Trial 1							
2. Quality	.42	1.00					
3. Quantity	-.10	-.54	1.00				
Trial 2							
4. Quality	.48	.79	-.51	1.00			
5. Quantity	-.16	-.68	.76	-.65	1.00		
Trial 3							
6. Quality	.40	.74	-.56	.67	-.62	1.00	
7. Quantity	-.11	-.63	.77	-.44	.93	-.59	1.00

NOTE: Conscientiousness refers to the average conscientiousness score of each three-member group. Quality refers to practicality of the uses generated and may range from 1 to 7. Quantity refers to the number of uses generated. In all cases, higher numbers indicate a greater amount of a variable. Correlations greater than .30 are significant at the .01 level.

as their own) uses and appeared to have formed this norm: "A good alternate use must be clearly feasible, and unique from any other use that was previously given."

The low-conscientious groups seemed to react much differently to the caucus periods. Rather than having an inhibitory effect, the caucus periods freed the low-conscientious group members, leading them to relax standards for naming alternate uses. The low-conscientious groups seemed to develop performance norms suggesting that "anything goes." In sum, the results provide some evidence that high-conscientious groups concentrated more on performance quality and low-conscientious groups on quantity.

Task characteristics may moderate the relationship between group conscientiousness and task performance. Specifically, Costa et al. (1991) noted that conscientiousness has both proactive (e.g., need for achievement and commitment to work) and inhibitive aspects (e.g., moral scrupulousness and cautiousness). Its inhibitive aspects may be negatively related to creativity. Tegano and Moran (1989) related the amount of idea generation to one's willingness to take risks and suggested that risk taking was inversely related to the desire for conformity. Conscientious individuals prefer things to be orderly, consistent, and systematic—qualities that lend themselves to conformity rather than to risk taking.

The results of the present study should be interpreted with caution, because group norms were not systematically recorded and content analyzed. Instead, norm development was inferred from the differential effects on performance of different amounts of group interaction. Furthermore, although group norms did develop and interaction over multiple trials simulated actual group interaction, laboratory groups lack the depth and richness of intact groups. Five-minute caucus periods cannot capture the complexity of ongoing relationships within groups. Finally, the conclusions drawn by the authors were based on post hoc interpretations of the data. As such, they lack the scientific rigor of conclusions based on data that conform to a priori predictions.

If organizations continue to use personality traits as predictors of performance, while at the same time emphasizing group work, then research on the impact of personality composition on productivity and performance quality will continue to be important. Future research should replicate and extend the present study by examining heterogeneous, as well as homogeneous group personality composition to determine its impact on norm development and subsequent performance.

NOTE

1. When group members individually complete measures, the measures should be analyzed for within-group agreement before aggregation. One method of assessing within-group agreement is the r_{wg} (James, Demaree, & Wolf, 1984). The r_{wg} values range from zero to one, with zero indicating no agreement between group members and one representing perfect agreement on a particular variable (James, Demaree, & Wolf, 1993). For the manipulation check item, an r_{wg} of .71 was obtained; for the norm development scale, an r_{wg} of .86 was obtained. Both numbers indicated acceptable levels of within-group agreement; thus, individual responses were combined for each group so that analyses could be conducted at the group level.

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