# Conscientiousness and Performance of Sales Representatives: Test of the Mediating Effects of Goal Setting

## Murray R. Barrick, Michael K. Mount, and Judy P. Strauss

The authors used 91 sales representatives to test a process model that assessed the relationship of conscientiousness to job performance through mediating motivational (goal-setting) variables. Linear structural equation modeling showed that sales representatives high in conscientiousness are more likely to set goals and are more likely to be committed to goals, which in turn is associated with greater sales volume and higher supervisory ratings of job performance. Results also showed that conscientiousness is directly related to supervisory ratings. Consistent with previous research, results showed that ability was also related to supervisory ratings of job performance and, to a lesser extent, sales volume. Contrary to expectations, 1 other personality construct, extraversion, was not related to sales volume or to supervisory ratings of job performance. Implications and future research needs are discussed.

In recent years there has been a resurgence of interest in the validity of personality. This can be attributed largely to the emergence of the Big Five personality structure in the personality literature (e.g., Digman, 1990) and to the results of large-scale meta-analyses—by Barrick and Mount (1991); by Hough, Eaton, Dunnette, Kamp, and McCloy (1990); and by Tett, Jackson, and Rothstein (1991)—that have indicated that the relationship between personality constructs and various criteria is greater than was traditionally believed.

In the past decade, the five-factor model of personality has received wide attention as a comprehensive and parsimonious taxonomy of personality traits. Although the labels assigned to the Big Five differ somewhat across researchers, the following names and prototypical characteristics are representative: (a) extraversion (sociable, talkative, assertive, ambitious, and active); (b) agreeableness (good-natured, cooperative, and trusting); (c) conscientiousness (responsible, dependable, planful, organized, persistent, and achievement oriented); (d) emotional stability (calm, secure, and not nervous); and (e) openness to experience (imaginative, artistically sensitive, and intellectual). Research has indicated that these factors are quite robust, as demonstrated by longitudinal and across-observer studies; in different age, sex, race, and language groups; and across different theoretical perspectives. There is even some biological basis, as suggested by evidence of heritability. (See Digman, 1990, and Costa & McCrae, 1992, for a more in-depth discussion.)

Although the meta-analytic reviews by Barrick and Mount (1991) and by Hough et al. (1990) adopted slightly different personality frameworks, the conclusions can be summarized in terms of the Big Five taxonomy. In general, they indicate that

one of the Big Five dimensions, conscientiousness (achievement and dependability in the Hough et al., 1990, framework), is a valid predictor ($\rho > .20$) for all occupational groups and all job-related criterion types studied. In contrast, validities for the other Big Five factors generally were smaller or were only predictive for a subset of occupational types or criterion categories. Furthermore, researchers in the U.S. Army Selection and Classification Study (Project A; McHenry, Hough, Toquam, Hanson, & Ashworth, 1990) also found that achievement and dependability (i.e., conscientiousness) were valid predictors of targeted criteria. It should be noted, however, that a recent meta-analysis (Tett et al., 1991) did not find that conscientiousness was the most valid predictor of job performance. Yet, overall, the preponderance of evidence has shown that conscientiousness is an important determinant of job performance and should occupy a central role in models that seek to explain job performance (Schmidt & Hunter, 1992).

Borman, White, Pulakos, and Oppler (1991) proposed a model of job performance that is relevant to our study. They suggested that performance comprises "can-do" and "will-do" components. Can-do performance components are primarily related to measures of ability, declarative knowledge, procedural knowledge, and skills. On the other hand, will-do performance components are best predicted by measures of personality (particularly components of conscientiousness), interests, and reward preferences.

Drawing on this distinction, Borman et al. (1991) conducted a study that provides some insight into the processes through which conscientiousness and ability are related supervisory ratings of performance. Similar to other researchers (Hunter, 1983; Schmidt, Hunter, & Outerbridge, 1986), Borman et al. found that cognitive ability is associated with supervisory ratings of performance primarily through the mediating effect of job knowledge (a can-do measure) rather than motivational (will-do) variables. In contrast, dependability and achievement orientation (both aspects of conscientiousness) were related to supervisory ratings of job performance primarily through will-do outcome measures (e.g., disciplinary actions, awards, and

Murray R. Barrick, Michael K. Mount, and Judy P. Strauss, Department of Management and Organizations, University of Iowa.

Correspondence concerning this article should be addressed to Murray R. Barrick, Department of Management and Organizations, University of Iowa, 651 Phillips Hall, Iowa City, Iowa 52242-1323.

commendations). These results are important because they identify some ways that conscientiousness is related to supervisory ratings of performance. Our main purpose in this study was to examine the processes through which conscientiousness is related to performance. Specifically, we examined the thesis that conscientiousness is related to job performance through proximal motivational-state variables, such as goal setting and goal commitment.

## Relationship Between Conscientiousness, Goals, and Performance

The positive effects of goal setting on performance are well documented (e.g., Locke, Shaw, Saari, & Latham, 1981) and are not discussed in detail here. Of greater interest for this study is the idea that conscientiousness is an important determinant of goal-setting behavior. To better understand the mechanisms through which conscientiousness might affect goal-setting variables, it is helpful to examine the definition of motivation provided by Campbell (1991): "[it is] a combined effect from three choice behaviors—choice to expend effort, choice of level of effort to expend and choice to persist in that level of effort" (p. 706). Traits representative of conscientiousness are closely associated with these three choice behaviors. Individuals who are high in conscientiousness are planful, organized, and purposeful, which leads to setting goals (i.e., choice to expend effort). Furthermore, conscientious individuals are achievement oriented, are hardworking, and have high expectations of themselves, which leads to them setting more difficult goals (i.e., choice of level of effort to expend). Conscientious individuals are also responsible, dependable, and persistent and, consequently, are likely to accomplish or try to accomplish what is expected of them, which leads to higher commitment to their goals (i.e., choice to persist in that level of effort). In short, conscientious individuals could be expected to perform better because they set goals, which directs their effort; they exert more effort to achieve difficult, challenging goals; and they are more committed to exert effort to pursue those goals for a longer time period.

This suggests an important association between conscientiousness and goal setting. Although the effects of personality on goal setting have only rarely been investigated, most of the research has investigated the effects of one component of conscientiousness, need for achievement (nAch), on goal setting (e.g., Hollenbeck, Klein, O'Leary, & Wright, 1989; Hollenbeck, Williams, & Klein, 1989; Ivancevich & McMahon, 1977; Jackson, 1974; Singh, 1972; Steers, 1975). The findings of these studies suggest that components of conscientiousness are related to goal setting through the three motivational-choice behaviors just discussed.

First, conscientiousness has been shown to be related to whether or not an individual sets goals. For example, Jackson (1974) indicated that individuals high in nAch are more likely to establish and work toward distant goals. Second, in other studies, researchers have suggested that nAch (i.e., conscientiousness) influences the difficulty of goals set (e.g., Hollenbeck & Williams, 1987; Singh, 1972; Steers, 1975). Third, conscientiousness has been shown to be an antecedent to goal commitment. For example, in two recent studies, Hollenbeck and his associates (Hollenbeck, Klein, O'Leary, & Wright, 1989) found that high nAch college students exhibited greater commitment to goals set (either assigned or self-set) for overall grade point average during a semester ($N = 194$) or for a computer card sorting task ($N = 219$).

These findings are particularly relevant in light of observations by Kanfer (1991) in which she states that distal theories of motivation (which include personality-based theories) mediate effects on action through proximal motivational states, such as goal choice and intended effort. Furthermore, Kanfer (1991) noted that a "fundamental problem in the investigation of dispositional influences on work behavior stems from the current lack of a unified theoretical perspective for understanding how and which personality constructs influence the motivational system" (p. 155). We believe conscientiousness is the distal personality construct that relates to proximal motivational (goal-setting) variables, which, in turn, relate to performance. As Schmidt and Hunter (1992) have stated, conscientiousness may be the most important trait-motivation variable in personnel psychology. Given the theoretical and empirical support reported here, we tested the following process model in our study.

## Model Description

The proposed model that we tested posits relationships among personality and ability measures, goal-setting variables, and job proficiency measures. Specifically, we expected that individuals high in conscientiousness would be more likely to autonomously set work-related goals and that such individuals would have greater commitment to their goals. We were unable to examine the relationship between conscientiousness and the difficulty of goals set as the goals were all considered difficult (we discuss this later). However, Hollenbeck and Klein (1987) found that when only difficult goals are established, greater goal commitment will lead to greater performance. Therefore, we expected greater goal commitment to result in higher job performance.

Furthermore, we expected that individuals who autonomously set goals would also be more committed to those goals. Ideally, we would have liked to investigate this relationship. However, it was not possible to assess the effects of goals set autonomously in the current performance period, because the firm we studied was in the process of implementing an organizationwide goal-setting program for sales representatives. Therefore, in the current study, subjects were asked to indicate whether or not they had autonomously set goals in the year before the current performance period. On the basis of the positive effects of goal setting, we thought it was logical to assume that most individuals who had established goals in the past were likely to believe that goal setting is instrumental to effective performance; consequently, we thought that such individuals would hold more favorable attitudes toward subsequent goals. Therefore, we also expected that individuals who had autonomously set goals in the past would be more committed to current goals.

This reasoning also suggests that an individual who has autonomously set prior goals will also exhibit higher current performance. In a previous study, Taylor, Locke, Lee, and Gist (1984) indicated that autonomously setting minimally accept-

able goals with respect to the number of publications to be produced each year directly affected the research productivity of 278 university faculty over a 7-year period. Thus, we also expected that individuals who autonomously set goals would exhibit higher performance.

To more broadly depict performance, we examined two job-proficiency measures: an outcome-based measure (sales volume) and a behaviorally based measure (supervisory ratings of job performance). The model of supervisory ratings by Borman et al. (1991) showed that task proficiency measures (as measured by work-sample tests) were related to supervisory ratings. On the basis of this model, we expected that sales volume, as a measure of sales (task) proficiency, would be directly related to supervisory ratings.

It should be noted that the model we investigated in this study also posits several relationships that have been identified in previous studies. For example, the Barrick and Mount (1991) meta-analysis demonstrated that, for sales representatives, extraversion (in addition to conscientiousness) was a significant predictor of performance. Therefore, we expected that conscientiousness and extraversion would be positively related to supervisory ratings of job performance and sales volume.

One other important individual difference predictor, general mental ability (GMA), was included in this study because it has been shown to be significantly related to supervisory ratings of sales representatives' performance (Churchill, Ford, Hartley, & Walker, 1985). As demonstrated in prior research (Borman et al., 1991; Hunter, 1983; Schmidt et al., 1986), GMA is related to supervisory ratings primarily through the mediating effect of job knowledge rather than through motivational-state variables (such as goal setting). Because there was no job knowledge measure in our study, we expected that GMA would be directly related to job performance.

Our review of the literature did not result in any empirical or theoretical basis for hypothesizing a relationship between extraversion and goal setting or between GMA and goal setting. Therefore, neither GMA nor extraversion were expected to be directly related to the motivational-state variables.

## Method

### Subjects and Procedure

Our sample consisted of 91 sales representatives in a large appliance-manufacturing organization; 83% of these were men, the median age was 37 years, and the average tenure in the organization was 10 years. The nature of the sales is best classified as *wholesale,* as the customers were appliance dealers rather than actual customers. Subjects completed a demographic-data form, an ability measure, and a personality inventory (the Personal Characteristics Inventory, or PCI, which measures the Big Five personality dimensions). Subjects also established sales goals as part of a training seminar on goal setting. Performance data consisted of supervisory ratings of sales representatives' overall performance over a 6-month period and the total volume of sales made over the 6-month period by the sales representatives.

### Measures

*GMA.* GMA was assessed by the Wonderlic Personnel Test, Form 5. Across forms, test–retest reliabilities reported in the test manual range from .82 to .94. Alternative form reliabilities range from .73 to .95,

whereas other measures of internal consistency (e.g., $\alpha$, KR-20) reported range from .88 to .94 (see Wonderlic & Associates, 1983).

*PCI.* We used the PCI to comprehensively measure the five personality constructs. (For a more thorough description of the item content and the development method, see Barrick & Mount, 1993.) In essence, items representing each of the five constructs were compiled from existing inventories to assess the primary traits associated with each construct. The final inventory has 132 items.

The PCI has been administered to over 2,000 individuals, including students, managers, sales representatives, retail clerks, and production workers. The accumulated data have been factor analyzed using the principal-components method and varimax rotation. The items for the resulting five-factor structure (extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience) had relatively high factor loadings on a priori factors and did not load on other factors. Coefficient alpha reliability estimates are .81, .67, .85, .81, and .82, for each of the constructs, respectively. Values for test–retest reliability data for 63 salespersons over a 9-month period are .73, .70, .84, .73, and .79, respectively. In addition, in one study, 205 students completed the PCI and another measure of the Big Five—the NEO Personality Inventory (Costa & McCrae, 1985)—and resulting correlations among similar personality constructs were .68, .56, .71, .67, and .63, respectively. In another study, a sample of 88 salespersons completed the 20-item, bipolar adjective trait scales originally used by Norman (1963), and correlations between similar constructs were .66, .51, .67, .64, and .59, respectively. In both of these studies, correlations with dissimilar constructs were much lower, ranging from .04 to .39. Taken as a whole, these data provide evidence of the construct validity of the five constructs measured by the PCI.

*Autonomous goal setting.* Prior goal setting referred to whether goals were autonomously set the year before the current performance period and was based on representatives' responses to two items: "Did you set monthly (dollar) sales goals over the past year?" and "Did you set monthly sales-call goals over the past year?" An affirmative response to either item was indicative of goal setting and was coded as 1, whereas a 0 indicated that the sales representative did not autonomously set sales or sales-call goals. To ensure that the sales (dollar) and sales-call goals were autonomously set, we asked subjects a follow-up question about the source of the goal (i.e., self-set; self-set, then discussed with management; or assigned by management). Twelve of the original 103 respondents had had prior goals assigned by their managers. Because these subjects did not fit into either category (failed to set goals or autonomously set goals), they were eliminated from all analyses. Overall, 64 of the sales representatives reported setting their own monthly sales volume, monthly sales-call goals, or both, during the past year.

*Goal commitment and goal difficulty.* We assessed goal commitment with the abbreviated four-item unidimensional self-report scale developed by Hollenbeck and his colleagues (Hollenbeck, Klein, O'Leary, & Wright, 1989; Hollenbeck, Williams, & Klein, 1989). The response scale associated with these items is a 5-point Likert scale anchored by *strongly agree* (5) and *strongly disagree* (1), with negative items recorded so that a high score on the scale is indicative of high goal commitment. The coefficient alpha estimate for the scale was .80 in our study.

We also assessed goal difficulty for each salesperson. First, the salesperson was asked to check the level of difficulty for the goal she or he had set on a 4-point scale ranging from *nearly impossible or very difficult* (4), to *moderately difficult* (3), to *moderately easy* (2), to *very easy to achieve* (1). In addition, each salesperson's supervisor was asked to rate the difficulty of the goal set by the subordinate for the specified time frame using the same scale. Both subordinates and supervisors perceived the goal levels set as being very difficult. In fact, 70% of the supervisors rated a goal as being *nearly impossible* or *very difficult* to achieve ($M = 3.78$, $SD = 0.61$), and no supervisor utilized the lowest scale response (i.e.,

Table 1
*Intercorrelation Matrix*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | M | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. General mental ability | **.85** | | | | | | | | | | 28.00 | 5.90 |
| 2. Conscientiousness | −.07 | **.89** | | | | | | | | | 2.62 | 0.22 |
| 3. Extraversion | −.10 | −.03 | **.85** | | | | | | | | 2.42 | 0.30 |
| 4. Emotional stability | −.14 | .41** | −.03 | **.85** | | | | | | | 2.41 | 0.34 |
| 5. Agreeableness | −.04 | .25** | −.04 | .34** | **.67** | | | | | | 2.54 | 0.21 |
| 6. Openness to experience | −.03 | .08 | .28** | .12 | −.17 | **.86** | | | | | 2.49 | 0.28 |
| 7. Prior goal setting | .00 | .39** | .19* | .19* | .04 | .14 | **.90** | | | | 0.74 | 0.39 |
| 8. Goal commitment | .05 | .35** | .11 | .27** | .13 | .15 | .26** | **.80** | | | 4.59 | 0.38 |
| 9. Sales volume | .12 | .21* | −.01 | .03 | −.01 | .08 | .23* | .21* | **.67** | | 0.00 | 0.74 |
| 10. Supervisory ratings of job performance | .22* | .29** | .04 | −.09 | .15 | .15 | .34** | .25* | .21* | **.50** | 3.65 | 0.71 |

*Note.* $N = 91$. Values in boldface represent coefficient alpha estimates, except for the performance measures, which were assumed to be .67 for sales volume and .50 for supervisory ratings of job performance. The sales volume reliability estimate was based on a sample-weighted reliability estimate for sales measures reported in a recent meta-analysis for objective measures assessed over 26 weeks (Hunter, Schmidt, & Judiesch, 1990). The average interrater reliability of a single supervisor's rating of .50 was based on the average mean estimate reported by Rothstein (1990).
* $p < .05$, one-tailed. ** $p < .01$, one-tailed.

the goal is *very easy to achieve*). The correlation between the subordinate and focal supervisor's difficulty ratings was .84, and both measures had correlations greater than .70, with goal level based on expected dollar amount of sales. On the basis of these results, we concluded that the goals established by the sales representatives could be considered difficult. Previous research has shown that goal difficulty is related to enhanced task performance. However, in the present study there was very little variability on the difficulty measure; therefore, we expected the correlation between goal difficulty and performance to be low. Nevertheless, because of the importance of this variable and because there was at least some variability in goal difficulty, we conducted analyses controlling for the effects of goal difficulty. The results were not substantively changed by these analyses.

*Job performance ratings.* Researchers developed an 11-dimension measure of job performance on the basis of an analysis of the sales jobs. The dimensions were job knowledge, quality of work, quantity of work, initiative, customer communications, organizational commitment, job commitment, planning and allocation, interpersonal orientation, self-development, and account management. Each dimension was defined by a one-sentence description, followed by three interpretative examples illustrating important facets of that dimension. Supervisors rated subjects' performance on a 5-point Likert scale ranging from *consistently exceeds job requirements* (5) to *somewhat below job requirements* (1). Supervisors were informed that ratings were being collected for research purposes. Overall performance was the sum of the rankings across all dimensions. The coefficient alpha estimate for this scale was .75.

*Sales data.* The measure of sales performance used by this organization was a *z* score computed in the following way. The average of the salesperson's monthly sales over the past two quarters was subtracted from the mean sales of their geographic region, and this number was divided by the average standard deviation of the 14 geographical regions used by the firm. A *z* score was used to account for the wide variance in sales volume across the different regions. The measure was averaged over two quarters to give a more stable representation of sales performance than that provided by a single month.

## Results

Descriptive statistics and uncorrected correlations between variables are presented in Table 1. Although we formally tested

relations for only two of the Big Five dimensions, we provide zero-order correlations for the other factors (emotional stability, agreeableness, and openness to experience). As shown, the correlations of these three factors with the two job-performance measures were near zero. However, emotional stability was significantly correlated with both goal-setting variables.

We assessed the proposed model by using maximum likelihood estimation as implemented in LISREL 7 (Jöreskog & Sörbom, 1989). All subsequent analyses were based on the covariance matrix. In this model, all the variables were treated as single indicators of latent variables. An alternative approach would have been to operationalize all variables in the model as multiple-indicator variables, although this would have required a larger sample to derive stable estimates of parameters. To account for the effects of measurement errors, we fixed both the common and unique factor loadings for these variables. Specifically, we fixed the common factor loadings for single-indicator latent variables as the product of the square root of the reliability and the standard deviation of the observed variable. Unique variance was fixed as the product of the variance of the observed variable times 1, minus the reliabilities. We used the following reliability estimates: GMA $\alpha = .85$, conscientiousness $\alpha = .89$, extraversion $\alpha = .85$, prior goal setting $\alpha = .90$, goal commitment $\alpha = .80$, sales volume $\alpha = .67$, and supervisory ratings of job performance $\alpha = .50$.

The standardized solution for the model is presented in Figure 1. Six of the path coefficients were statistically significant (all $ps < .05$). In particular, there were significant linkages between conscientiousness and autonomous goal setting ($\beta = .44$), goal commitment ($\beta = .35$), and supervisory ratings of job performance ($\beta = .23$). Autonomous goal setting was associated with sales volume ($\beta = .21$) and with supervisory ratings ($\beta = .33$). Furthermore, there was a significant linkage between GMA and supervisory ratings ($\beta = .34$).

For the entire model, the multiple correlation was .67 ($R^2 = .45$). As this suggests, 45% of the variability in this model was accounted for by the relationships we posited, which demon-
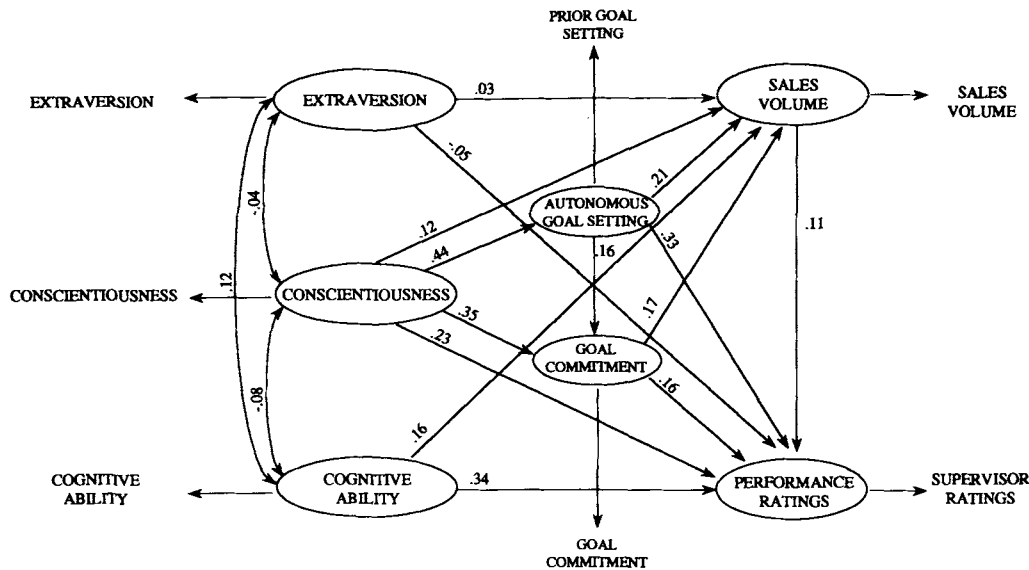
*Figure 1.* Standardized parameter estimates for the hypothesized structural model. (Ovals indicate latent variables.)

strates the strength of the path model assessed. The goodness-of-fit indexes also demonstrated that the model had an acceptable fit with the data: the chi-square was nonsignificant, $\chi^2(4, N = 91) = 7.32, p = .13$; the goodness-of-fit index of .981 was well above the .90 guideline; and the root mean square residual (rmsr) index was below .05 (rmsr = .02). These measures indicated that the theoretical model has a good fit to the data.

Because 17 of 21 possible relationships were specified, the proposed model is not parsimonious. As a result, the fit statistics should be interpreted cautiously, because such a model would be more likely to fit the data than would a model with fewer relationships posited among variables. For example, when goodness-of-fit was estimated with an index that rewards more parsimonious models, such as the root mean square error-of-approximation index developed by Browne and Cudeck (1993), the resulting fit value (.093) was lower than that indicated by the rmsr index (.02), although it still exceeded the .10 rejection guideline suggested by Browne and Cudeck.

It is relatively common practice to modify models by deleting nonsignificant paths. However, models modified in this way have recently been shown to be unstable, to cross-validate poorly, and to lack generalizability to the population (MacCallum, Roznowski, & Necowitz, 1992). Because the model proposed in this study fit the data reasonably well and in light of the conclusions by MacCallum et al., no modifications were made.

Tables 2 and 3 contain the decomposition of direct and indirect relationships of the predictor variables to sales volume and to supervisory ratings of job performance, respectively. Table 2 shows that conscientiousness and autonomous goal setting were the most salient predictors of sales volume (.28 and .24, respectively). A major portion of the relationship was direct for autonomous goal setting, whereas the major portion of the relationship was indirect for conscientiousness. The indirect relationship between conscientiousness and sales volume was primarily through goal commitment and autonomous goal setting. Two

other measures, goal commitment and GMA, were related (albeit modestly) to sales volume (.17 and .16, respectively). Extraversion had a very small, negative relationship with sales volume (−.05).

Supervisory ratings of performance (Table 3) were predicted most strongly by conscientiousness (total relationships = .46), which, again, highlights the salience of this variable. For this predictor, the magnitude of the indirect and direct relationships was the same. Autonomous goal setting also displayed a strong relationship with supervisory ratings (.38), with the contribution being primarily direct. GMA also contributed significantly to this criterion (.34). In contrast, goal commitment and sales volume had smaller relationships with supervisory ratings (.18 and .11, respectively). Finally, the direct relationship between extraversion and supervisory ratings was very small (.03).

## Discussion

Before this study, relatively little was known about the way conscientiousness relates to performance, with the exception of the Borman et al. (1991) study, which focused on how awards and commendations and disciplinary actions mediate this relationship. The present study has extended the knowledge of this relationship by focusing on proximal process variables, such as goal setting. Our results show that autonomous goal setting and, to a lesser extent, goal commitment mediate the relationship between conscientiousness and two measures of job proficiency—supervisory ratings of job performance and sales volume. This indicates that highly conscientious individuals are more likely to set goals autonomously, to be committed to subsequent goals, and to perform better. The mediators did not account for all of the effects attributed to conscientiousness, however, because conscientiousness was also found to directly relate to supervisory ratings and, to a lesser extent, to sales volume. In

Table 2

*Total, Direct, and Indirect Relationships Between Predictor Variables and Sales Volume*

| | Relationship | | | | | |
|---|---|---|---|---|---|---|
| | | | | Indirect through: | | |
| Predictor variable | Total | Direct | Total indirect | GC | AGS | AGS → GC |
| Conscientiousness | .28 | .12 | .16 | .06 | .09 | .01 |
| General mental ability | .16 | .16 | NA | NA | NA | NA |
| Extraversion | −.05 | −.05 | NA | NA | NA | NA |
| Goal commitment | .17 | .17 | NA | NA | NA | NA |
| Autonomous goal setting | .24 | .21 | .03 | .03 | NA | NA |

*Note.* All values are standardized beta coefficients. GC = goal commitment; AGS = autonomous goal setting; NA = not applicable.

fact, for supervisory ratings, the magnitude of the direct relationship was equal to that for the indirect relationships.

Contrary to expectations, extraversion is not significantly related to either supervisory ratings of job performance or sales volume. Thus, for the sales representatives in this study, being extraverted, outgoing, sociable, and active was not related to higher performance. Although these findings differ from our expectations, it should be noted that the meta-analytic results reported by Barrick and Mount (1991) indicated that a moderator may exist for extraversion for sales representatives because the standard deviation of the true validity was large relative to the true validity estimate ($SD_p$ = .16, $\rho$ = .15) and because the percentage of variance accounted for by statistical artifacts (54%) was low (Hunter & Schmidt, 1990). Thus, a fertile area for future research is the examination of potential moderators between extraversion and job performance in sales positions. Given the wide differences in content for sales representative jobs, one potential moderator could be the type of sales job, such as retail versus wholesale sales. In the present study, the sales representatives were engaged in wholesale sales, in which extraversion may be less important.

Turning to the goal-setting variables, we found that the relationships of autonomously set goals to the two job-proficiency measures were larger than those between goal commitment and the same measures (especially for supervisory ratings of job performance), although the relationships between goal setting and performance can be characterized as moderate in size. However, it should be noted that these relationships represent the unique effects attributed to the goal-setting variables, after controlling for conscientiousness, ability, and extraversion, as well as for autonomously set goals for goal commitment. Given this, it is not surprising that the magnitude of these relationships was not large in this study. As indicated by the zero-order correlations, the goal-setting variables were moderately correlated with both sales volume and supervisory ratings. These results correspond to the well-documented findings about the positive effects of goal setting.

Finally, stronger direct and indirect relationships were observed for supervisory ratings of job performance than for sales volume. These findings may be explained in part by using the distinction made by Campbell (1991) between observable behaviors under the control of the individual and the results, or

Table 3

*Total, Direct, and Indirect Relationships Between Predictor Variables and Supervisory Ratings of Job Performance*

| | Relationship | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Indirect through: | | | | |
| Predictor variable | Total | Direct | Total indirect | Sales | GC | AGS | AGS→ GC→ sales | GC→ sales |
| Conscientiousness | .46 | .23 | .23 | .01 | .06 | .15 | .01 | .00 |
| General mental ability | .34 | .34 | NA | NA | NA | NA | NA | NA |
| Extraversion | .03 | .03 | NA | NA | NA | NA | NA | NA |
| Sales volume | .11 | .11 | NA | NA | NA | NA | NA | NA |
| Goal commitment | .18 | .16 | .02 | .02 | NA | NA | NA | NA |
| Autonomous goal setting | .38 | .33 | .05 | .02 | .03 | NA | .00 | NA |

*Note.* All values are standardized beta coefficients. GC = goal commitment; AGS = autonomous goal setting; Sales = sales volume; NA = not applicable.

outcomes, of those behaviors that are almost certainly affected by variables outside the control of the individual. The performance-rating measure assessed behaviors that a sales representative may be able to control, such as job knowledge, initiative, customer communications, and so on. Sales volume, on the other hand, is a result or outcome over which a representative may have limited control. Viewing the two criteria in this way may also explain why the correlation between supervisory ratings and sales volume in this study was relatively small and why the relationships modeled in this study differed for these two measures.

Overall, this study extends current theory in two primary ways. First, it provides initial (albeit modest) support for a process model of motivation that combines both proximal and distal motivational variables into one model (Kanfer, 1991). As stated earlier, conscientiousness was related to autonomous goal setting and to commitment to goals. By specifying some of the proximal paths (i.e., goal-setting variables) through which dispositional tendencies (i.e., conscientiousness) influence performance, we have illustrated how distal motivational variables and proximal variables may generate complementary knowledge about the motivational system.

Second, our study supports and extends the development of theoretical models of job performance. Previous models (Borman et al., 1991; Hunter, 1983; Schmidt et al., 1986) have emphasized can-do cognitive measures (e.g., job knowledge) and will-do motivational outcomes (e.g., awards and commendations) as mediators of ability and conscientiousness (achievement and dependability). In contrast, we have emphasized will-do motivational-process variables (e.g., autonomous goal setting and goal commitment). Our model of supervisory ratings of job performance accounted for more variance in ratings ($R^2$ = .45) than has been accounted for by earlier models, such as Borman et al.'s ($R^2$ = .31). As this suggests, process measures of motivation play a critical role in performance and should be included in future model development and testing.

The important practical implications from the results of our study pertain primarily to the selection or promotion of employees. Our research contributes to a growing body of evidence (Barrick & Mount, 1991; Hough et al., 1990) that suggests that one dimension of the Big Five, conscientiousness, is an important individual-difference variable for predicting measures of job proficiency, particularly, supervisory ratings of job performance. As expected, our results also correspond with prior research that demonstrated that GMA is an important predictor of supervisory ratings. More important, however, is that because the correlation between conscientiousness and GMA was very low ($r = -.07$), both predictors contributed unique variance on the performance measures. Such findings underscore the importance of using both predictors in selection settings, because the incremental validity would be maximized in such circumstances. Therefore, this study demonstrates that personality-based tests that assess conscientiousness provide organizations with another useful selection tool.

In summary, previous research has indicated that conscientiousness may be the most important trait-motivation variable in the work domain (Barrick & Mount, 1991; Schmidt & Hunter, 1992). The major contribution of our study is that it provides insight into some of the processes through which conscientiousness is related to performance. Our results indicated that conscientiousness influences two job-proficiency measures—sales volume and supervisory ratings of job performance—in part through motivational-state mechanisms, such as autonomously initiated goal setting and, to a lesser extent, commitment to goals. That is, highly conscientious sales representatives are more likely to set goals, are more committed to goals once goals are established, and perform better as a result. On the basis of present and related findings, we believe that conscientiousness should play a central role in theories of job performance.

## References

Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: A meta-analysis. *Personnel Psychology, 44,* 1–26.

Barrick, M. R., & Mount, M. K. (1993). Autonomy as a moderator of the relationships between the Big Five personality dimensions and job performance. *Journal of Applied Psychology, 78,* 111–118.

Borman, W. C., White, L. A., Pulakos, E. D., & Oppler, S. H. (1991). Models of supervisor job performance ratings. *Journal of Applied Psychology, 76,* 863–872.

Browne, M., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 312–329). Newbury Park, CA: Sage.

Campbell, J. P. (1991). Modeling the performance prediction problem in industrial and organizational psychology. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (pp. 687–732). Palo Alto, CA: Consulting Psychologists Press.

Churchill, G. A., Ford, N. M., Hartley, S. W., & Walker, O. C., Jr. (1985). The determinants of salesperson performance: A meta-analysis. *Journal of Marketing Research, 22,* 103–118.

Costa, P. T., Jr., & McCrae, R. R. (1985). *The NEO-PI personality inventory.* Odessa, FL: Psychological Assessment Resources.

Costa, P. T., Jr., & McCrae, R. R. (1992). Four ways five factors are basic. *Personality and Individual Differences, 13,* 653–665.

Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology, 41,* 417–440.

Hollenbeck, J. R., & Klein, H. J. (1987). Goal commitment and the goal-setting process: Problems, prospects, and proposals for future research. *Journal of Applied Psychology, 72,* 212–220.

Hollenbeck, J. R., Klein, H. J., O'Leary, A. M., & Wright, P. M. (1989). Investigation of the construct validity of a self-report measure of goal commitment. *Journal of Applied Psychology, 74,* 951–956.

Hollenbeck, J. R., & Williams, C. R. (1987). Goal importance, self-focus, and the goal-setting process. *Journal of Applied Psychology, 72,* 204–211.

Hollenbeck, J. R., Williams, C. R., & Klein, H. J. (1989). An empirical examination of the antecedents of commitment to difficult goals. *Journal of Applied Psychology, 74,* 18–23.

Hough, L. M., Eaton, N. K., Dunnette, M. D., Kamp, J. D., & McCloy, R. A. (1990). Criterion-related validities of personality constructs and the effect of response distortion on those validities. *Journal of Applied Psychology, 75,* 581–595.

Hunter, J. E. (1983). A causal analysis of cognitive ability, job knowledge, job performance, and supervisory ratings. In F. Landy, S. Zedeck, & J. Cleveland (Eds.), *Performance measurement and theory* (pp. 257–266). Hillsdale, NJ: Erlbaum.

Hunter, J. E., & Schmidt, F. L. (1990). *Methods of meta-analysis: Correcting error and bias in research findings.* Newbury Park, CA: Sage.

Hunter, J. E., Schmidt, F. L., & Judiesch, M. K. (1990). Individual

differences in output variability as a function of job complexity. *Journal of Applied Psychology, 75,* 28–42.

Ivancevich, J. M., & McMahon, T. (1977). A study of task-goal attributes, higher order need strength, and performance. *Academy of Management Journal, 20,* 552–563.

Jackson, D. N. (1974). *Personality research form manual.* Port Huron, MI: Research Psychologists Press.

Jöreskog, K. G., & Sörbom, D. (1989). *Lisrel 7 user's reference guide.* Mooresville, IN: Scientific Software.

Kanfer, R. (1991). Motivation theory and industrial and organizational psychology. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (pp. 75–170). Palo Alto, CA: Consulting Psychologists Press.

Locke, E., Shaw, K., Saari, L., & Latham, G. (1981). Goal setting and task performance. *Psychological Bulletin, 90,* 125–152.

MacCallum, R. C., Roznowski, M., & Necowitz, L. B. (1992). Model modifications in covariance structure analysis: The problem of capitalization on chance. *Psychological Bulletin, 111,* 490–504.

McHenry, J. J., Hough, L. M., Toquam, J. L., Hanson, M. A., & Ashworth, S. (1990). Project A validity results: The relationship between predictor and criterion domains. *Personnel Psychology, 43,* 335–354.

Norman, W. T. (1963). Toward an adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. *Journal of Abnormal and Social Psychology, 66,* 574–583.

Rothstein, H. R. (1990). Interrater reliability of job performance ratings: Growth to asymptote level with increasing opportunity to observe. *Journal of Applied Psychology, 75,* 322–327.

Schmidt, F. L., & Hunter, J. E. (1992). Causal modeling of processes determining job performance. *Current Directions in Psychological Science, 1,* 89–92.

Schmidt, F. L., Hunter, J. E., & Outerbridge, A. N. (1986). Impact of job experience and ability on job knowledge, work sample performance, and supervisory ratings of job experience. *Journal of Applied Psychology, 71,* 432–439.

Singh, J. P. (1972). *Some personality moderators of the effects of repeated success and failure on task-related variables.* Unpublished doctoral dissertation, University of Akron, OH.

Steers, R. M. (1975). Task-goal attributes, n Achievement, and supervisory performance. *Organizational Behavior and Human Performance, 13,* 392–403.

Taylor, M. S., Locke, E. A., Lee, C., & Gist, M. E. (1984). Type A behavior and faculty research productivity: What are the mechanisms? *Organizational Behavior and Human Performance, 34,* 402–418.

Tett, R. P., Jackson, D. N., & Rothstein, M. (1991). Personality measures as predictors of job performance: A meta-analytic review. *Personnel Psychology, 44,* 703–742.

Wonderlic, E. F., & Associates. (1983). *Wonderlic Personnel Test manual.* Northfield, IL: Author.