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FIELD DEPENDENCE AND RELIANCE ON TASK VERSUS SOCIAL CUES IN
THE FORMATION OF TASK PERCEPTIONS AND ATTITUDES

The Ohio State University

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FIELD DEPENDENCE AND RELIANCE ON TASK VERSUS SOCIAL CUES
IN THE FORMATION OF TASK PERCEPTIONS AND ATTITUDES

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Paula M. Hogan, B.A., M.A.

* * * * *

The Ohio State University

1986

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CHAPTER 1
INTRODUCTION

Statement of Purpose

Job design has been a primary topic of research in organization science particularly during the last 10 years. The reason for its popularity is the expectation that job design (i.e., job enrichment) can improve employee performance and increase satisfaction and commitment to work. A central issue in job design research concerns the process by which workers make judgments about their jobs. Assumptions made about how task perceptions and affective reactions to the job develop are critical to determining strategies to enhance them. The literature on task design has been dominated by the job characteristics model which asserts that job attitudes result from the conjunction of individual needs and objective job characteristics. More recently, a social information processing approach (SIPA) to job design has been introduced which argues that task perceptions and attitudes or affective responses are, in large part, socially constructed realities.

A determination of the factors that affect the degree to which objective task and social cues influence perceptions and attitudes requires attention in job design research. It is probable that the weights given task versus social information vary predictably as a function of individual and situational factors (Weiss & Shaw, 1979).
An extensive body of psychological literature suggests that individuals differ greatly in their susceptibility to social influence. One individual difference variable which is likely to substantially influence the weight given social and task information is the cognitive style dimension, field dependence – independence (FDI).

The primary purpose of the present study is to investigate the degree to which FDI influences workers' reliance on task versus social cues in the formation of task perceptions and attitudes. Prior to introducing the FDI construct and its potential utility to job design research and practice, the state of the art in job design will be described. This will be followed by a discussion of existing job design research investigating FDI as a moderator of social influence.

The Job Characteristics Model

Although the two-factor theory (Herzberg, Mausner, & Snyderman, 1959) and the requisite task attributes model (Turner & Lawrence, 1965) were the first systematic approaches to studying job enrichment, the job characteristics model (Hackman & Lawler, 1971; Hackman & Oldham, 1975, 1976) has been the dominant approach in job design research and implementation. The extensive body of literature developing out of the job characteristics model has been reviewed in depth by Aldag and Brief (1979), Griffin (1982), Hackman and Oldham (1980) and Roberts and Glick (1981). It is described briefly below.

The job characteristics model (Hackman & Oldham, 1976) proposes that: (1) jobs can be characterized by a number of objective attributes including skill variety, task identity, task significance, autonomy and feedback; (2) individuals with high growth need strength (GNS) are more
likely to experience the psychological effects of an objectively enriched job; and (3) high GNS persons will respond favorably to an enriched job in the form of increased work satisfaction, motivation and commitment. The core premise of the model is that task perceptions and attitudes develop from the conjunction of relatively stable individual needs and objective task characteristics.

The objective job characteristics specified by the job characteristics model have been measured in most studies by employee self-report questionnaires such as the Job Diagnostic Survey (JDS; Hackman & Oldham, 1975) and the Job Characteristics Inventory (JCI; Sims, Szilagyi, & Keller, 1976). Self-report measures of job characteristics have been defended as valid on the grounds that such measures correlate moderately with descriptions of the same job provided by supervisors (e.g., Hackman & Oldham, 1975; Hackman, Pearce, & Wolfe, 1978). However, others (e.g., Brief & Aldag, 1978) have found low convergence among independent ratings of the same job. Shaw (1980) has summarized the concerns of a number of researchers about the perceptual nature of measurement of "objective" job characteristics. In attempting to explain the weak convergence among incumbents', supervisors' and researchers' evaluations of the same tasks, a number of researchers have suggested that factors other than the task itself may account for significant amounts of variance in task judgments (Hackman et al., 1978; Salancik & Pfeffer, 1977, 1978; Schwab & Cummings, 1976).
The Social Information Processing Approach

In response to the lack of convergence found among raters' evaluations of the same job and the typically small amount of variance accounted for in the associations between "objective" job characteristics and outcome measures (e.g., O'Reilly, 1977), Salancik and Pfeffer (1977, 1978) have questioned the theoretical foundation of the job characteristics model. They have taken issue with the assumptions that (1) jobs have stable and objective characteristics to which (2) individuals, who have stable needs, respond differently. Salancik and Pfeffer (1977, 1978) introduced an alternative framework for examining job design processes, i.e., a social information processing approach. The SIPA maintains that needs, attitudes and characterizations of jobs are, in large part, socially constructed.

The SIPA proceeds from the fundamental premise that "individuals, as adaptive organisms, adapt attitudes, behaviors and beliefs to their own past and present behavior and situation" (Salancik & Pfeffer, 1978, p. 226). According to this approach, perception, attitude and need statements have three causes: (1) the individual's cognitive evaluation of the actual job environment; (2) the information provided by the social context; and (3) the individual's self-perceptions, mediated by processes of causal attributions, of past actions. However, the SIPA clearly emphasizes social influence as the primary determinant of task perceptions and attitudes. In their evaluation of the job design literature, "Salancik and Pfeffer argue that social information influences are more dominant sources of incumbent task perceptions than are objective task qualities" (Blau & Katerberg, 1982, p. 544).
According to the SIPA, social information affects attitude and need statements both directly and indirectly. One very direct influence is the effect coworkers' overt statements have on a worker's attitudes (e.g., knowledge of coworker evaluations gives the worker ideas about how to react to the job's multidimensional components). A second way in which social influence operates is by making aspects of the environment more or less salient (e.g., coworkers frequently talking about certain dimensions). Social influence may also operate through the interpretation of environmental cues (e.g., coworkers sharing their interpretations of events). A final way in which social information may affect workers' attitudes is by influencing interpretation of their own needs (e.g., a coworker commenting that a job does not give a person a chance to think implies that this should be a need). Salancik and Pfeffer further argue that the more ambiguous the job characteristics, the more workers will need to rely on social information in the formation of task perceptions and attitudes.

Research on the SIPA

The SIPA has stimulated considerable research aimed at empirically testing the degree of association between social information cues and perceptions of task characteristics, attitudinal and/or behavioral responses. This research has been conducted in the laboratory with rare exception (i.e., Griffin, 1983; King, 1984). The procedures used to provide social information have varied widely across investigations. They include: (1) the source of cues used (e.g., confederate coworker, filmed model or written comments of supposed previous workers); (2) the types of cues compared in a single study
(e.g., positive vs. negative vs. neutral vs. mixed); (3) the form of cues provided (e.g., general affective statements vs. specific task comments); and (4) the time of cue delivery (prior to, during or after exposure to task). Recently a meta-analysis was conducted on the studies which have emerged from the SIPA (Thomas & Griffin, 1983), and the authors noted that none of the studies served even minimally to refute the job characteristics model. Those studies which have investigated objective task effects and social influence effects (i.e., O'Reilly & Caldwell, 1979; Weiss & Shaw, 1979; White & Mitchell, 1979; Griffin, 1983) have clearly shown that both objective task attributes and social cues independently influence both task perceptions and satisfaction.

Proposed Direction for Research

Pierce and Dunham (1976), in the first literature review of contemporary task design, noted that "task design research has generally been conducted without considering the contextual, structural or configurational character of the social system that houses the tasks and role occupants under investigation" (p. 95). While "Salancik and Pfeffer's inclination to replace rather than to complement the need-satisfaction model" (Alderfer, 1979, p. 100) has not been supported, the SIPA represents an important step in correcting the deficiency discussed by Pierce and Dunham. The integration of the SIPA into the job design literature has contributed to the development of a less simplistic and more comprehensive model of task design. The SIPA has broadened the study of job attitude determinants to include social effects and has highlighted the fact that finding meaning in a job
environment is an information-processing activity. Many fundamental
details concerning social influence processes have not however been
specified by the SIPA. Not addressed by the model are issues such as:
(1) what kinds of factors determine the extent to which social cues
affect task perceptions and attitudes; and (2) how do social information
cues combine with objective task characteristic information to determine
an employee's task perceptions and attitudes (Blau & Katerberg, 1982).
It is this first issue which is the focus of the present research.

The present study investigates whether FDI systematically
influences the extent to which social cues affect task perceptions and
attitudes. Averages across subjects have shown that both task and
social information influence task perceptions and attitudes. However,
an extensive body of psychological research suggests that the attention
and weight given social information vary predictably as a function of
stable individual attributes. Therefore, the general link between
individual differences and individual susceptibility to social
information can be based on such research. At present, none of this
research has been theoretically integrated into the job design
literature (Blau & Katerberg, 1982). Systematic analyses of the
personal factors which may influence the weights attached to task versus
social information, as well as the situational variables which may
moderate these relationships, are necessary. An extensive body of
literature on FDI is indicative of the potential relevance of the
construct for understanding the processes by which task perceptions
and attitudes are formed. A synopsis of the results of these studies
follows, and a detailed review of this literature is in Appendix A.
FDI and Reliance on Social Referents: A Summary

Field independent individuals tend to be more self-reliant and socially independent than their field dependent counterparts. A review of the literature allows specification of the circumstances under which relatively FD and FI people respond differently to available social referents. Research has shown that the tendencies to rely primarily on internal or external referents that persons display in perception of the upright have a direct counterpart in the interpersonal domain. This pattern of results found with tests of perception of the upright has likewise been demonstrated in studies using cognitive restructuring tests such as the Embedded Figures Test (EFT). Indicated by performance on the spatial orientation tests and cognitive restructuring tests, respectively, the results suggest that people who maintain autonomy of the external visual field are likely to function more autonomously of the external social frame of reference, and those who are competent at restructuring are less likely to need recourse to external sources of information in making judgments.

In the course of research on FDI, both spatial orientation tests and cognitive restructuring tests have been used to measure the construct; FDI, as measured by these two types of tests, was assumed to be a unitary construct. More recent evidence (Linn & Kyllonen, 1981; Witkin & Goodenough, 1981), however, suggests that the processes involved in perception of the upright are distinct from, though related to, the processes involved in performance on cognitive restructuring tests. Linn and Kyllonen (1981) report a study by Arbuthnot (1972) in which the average correlation between the EFT
and RFT across 30 studies was .54. When both spatial orientation and cognitive restructuring tests are administered, Linn and Kyllonen (1981) strongly discourage the use of a composite score and maintain that the most informative analysis would assess the separate contribution of each test. Both types of test have, however, been shown to be predictive of persons' tendencies to rely predominantly on internal or external referents, as previously stated. For a detailed discussion of the nature of the FDI construct and its measurement, see Appendix A, pp. 95-100.

In situations in which judgments about ambiguous stimuli are required and in unstructured role settings, FD persons are particularly attentive to and actively seek information from others. This reliance on a social frame of reference presumably results from a lesser capacity to impose structure on a situation that lacks it. As a consequence of this lesser capacity to structure situations, the FD person develops a repertoire of social behavior that is helpful in making external referents accessible when needed.

In contrast, FI persons display greater autonomy from others under conditions of ambiguity presumably through recourse to structuring mechanisms of their own. FI persons are more likely to be aware of needs, feelings and attributes which they experience distinctly as their own. These provide an internal frame of reference to which the FI person may adhere in evaluating the objective environment and in dealing with external social referents.
In experimental settings, FD subjects are found to be interested in and distracted by the many social cues present whereas FI subjects attend predominantly to task-relevant cues. Fitzgibbons et al. (1965) suggested that the FDI dimension, in part, reflects a social orientation versus a task orientation. Witkin and Goodenough (1977) epitomized the differing orientations of the FD and FI styles as "nonanalytical-interpersonal" and "analytical-impersonal", respectively.

As an aside, it should be noted that one defining characteristic of a cognitive style is that it is bipolar in nature; each end of the continuum has adaptive characteristics under specified circumstances. The analytical-impersonal nature of the FI style is obviously suited to different circumstances than is the nonanalytical-interpersonal orientation of the FD style. A more complete description of the bipolar nature of the FDI construct is available in Appendix A, pp. 100-101.

Integration of FDI into the Job Design Literature

Salancik and Pfeffer (1978) argue that all job perceptions, attitudes and needs are subject to social reality construction — for all persons. In attempting to determine the pervasiveness of social reality construction in the workplace, attention must be given to individual differences in susceptibility to social influence. The individual difference variables that determine the extent to which social cues affect task perceptions and attitudes need to be specified not only to achieve a more complete understanding of the SIPA itself, but also to determine the conditions necessary to increase the effectiveness of job design procedures. It is necessary to first
understand the "meaning" of employees' perceptual responses to the job in order to gain insight regarding the actions that should be taken in a job design effort.

In forming perceptions and reactions to a job, individuals are exposed to a wide array of cues and must bracket and retain a salient set in order to construct their particular reality of the workplace (Thomas & Griffin, 1983). Recipient characteristics would, in part, determine the salience or psychological importance of the cues available in the environment. As argued by Salancik and Pfeffer (1978), salient information not only provides an explanation for perceptions, attitudes, needs and behavior but also interferes with the use of other information to construct explanations. Given that different aspects of the environment appear to be salient for FD versus FI persons, it follows that different sets of cues (i.e., predominantly social or predominantly task cues) would be used to construct their particular reality of the workplace. The literature suggests that FD persons would be much more influenced by the social context or milieu in which the job is embedded.

**Existing Job Design Research Investigating FDI as a Moderator of Social Influence**

Theory strongly supports the FDI construct as an individual difference factor which may systematically influence the weights persons attach to task and social information in the formation of task perceptions and attitudes. The empirical results however are mixed. Three laboratory studies within the job design area have investigated the degree to which FDI moderates the impact of social
cues on task perceptions and attitudes. Possible explanations for
the inconsistent pattern of results across these studies will be
discussed. Suggestions for more adequate tests of the issue follow
from the theoretical discussion of the FDI construct.

Weiss and Shaw (1979) found strong support for the moderating
role of FDI on social cue effects. Eighty-eight male undergraduate
subjects were exposed to either positive or neutral comments from
models in a "training film" which was viewed prior to working on an
enriched or unenriched version of an electrical assembly task. The
modeling film displayed two students working on the task. While the
experimenter described the method for completing the task and the
activities of the student workers, these workers were engaged in
casual conversation which could just be heard in the background.
Half of the subjects saw a film in which the workers expressed four
general affective statements of a positive nature (e.g., "I don't mind
this task at all."). The other half saw a film in which the workers
made no task-related comments. The subjects' task perceptions, as
measured by the JDS, were influenced by both the social cues and the
objective design.

A significant interaction between social cues and FDI of subject
was also observed. Separate analyses of variance were then conducted
for FD and FI subjects as determined by a median split on the short
form (Jackson, 1956) of the Group Embedded Figures Test (GEFT). As
hypothesized, the results indicated that the effect of the models'
attitudes on task perceptions was much stronger for FD subjects. The
social cues manipulation accounted for 27% of the perceptual variance
for FD subjects but only 2% of the perceptual variance for FI subjects. Weiss and Shaw concluded therefore that the weight given to socially provided information is not always substantial. In contrast, the task manipulation explained 41% of the perceptual variance among FI subjects and only 23% for FD subjects; the task x FDI interaction was significant.

O'Connor and Barrett (1980), however, failed to find a significant FDI x social cues interaction. In this design, 90 male undergraduate subjects worked on the same physical task (i.e., maintenance work on complex electronic equipment) which was designed to be low in objective job enrichment. Half of these subjects were exposed to informational cues, specific to each task dimension, suggesting that the task was enriched; the other half received cues indicating that the task had a low level of enrichment. For example, in the low enrichment condition, task identity was manipulated by informing participants that they could complete only a small repetitive portion of the overall job. In contrast, in the high enrichment condition, participants were told that they could do a whole piece of work from beginning to end and therefore complete all needed maintenance work on each piece of equipment. Cues were in the form of written and tape-recorded messages interspersed with training instructions delivered prior to working on the task, and also reinforced by message cards inserted in the equipment decks during the task itself.

The task dimensions (task identity, responsibility, feedback, opportunity to learn new skills) were measured by the Attribute Description Scale (ADS) and a modified version of the Work Itself/Work Environment Description Questionnaire (WIWE). A main effect of
social cues was observed accounting for 43.1% of the variance in the ADS and 33.6% of the variance in the WIWE. The prediction that FDI would moderate the impact of social cues on task perceptions was not supported. FDI was measured using the RFT and the GEFT, and neither measure showed a significant interaction with social cues.

Weiss and Nowicki (1981) examined the effects of a worker model's task competence and an observing worker's FDI on the observer's adoption of the model's expressed task attitudes. FDI was measured using the short form of the GEFT (Jackson, 1956). A "training film" depicting two students (one working on the task and the other timing the task) was used to manipulate the attitudes and competence of the worker model. Half of the 160 male undergraduate subjects saw a film in which the worker expressed four fairly positive statements about the task which could just be heard in the background; the other half saw a film in which the model expressed four fairly negative affective statements. In addition, within each of the model attitude conditions, half of the subjects saw a model who performed well, and half saw a model who performed poorly. Subjects then worked on the same task shown in the training film, a molecule assembly task. Upon task completion, subjects indicated their satisfaction with the task by responding to four 7-point Likert-scaled items. These items asked subjects their beliefs about how satisfying the task was, how enjoyable it was, how interesting it was and how bored they were while working on the task.

A main effect of social cues on subject task satisfaction was observed. A highly significant three-way interaction between attitude, performance and FDI was also obtained. Contrary to expectations, the
results clearly showed that social information influenced the attitudes of both FD and FI persons; however, the subjects differed in the way they responded to the information. The FD subjects generally accepted the model's attitudes in a nondiscriminating manner, yielding to the social information independent of the characteristics of the communicator. The FI subjects were selectively influenced by social information, adopting the attitudes of high performing models only.

In summary, one study has shown that FDI moderates the impact of social cues and task design on task perceptions while a second study failed to find a significant interaction between FDI and social cues. A third study has shown that FD persons' expressed task satisfaction was influenced by social information irrespective of the competence of the communicator; in contrast, FI persons adopted the attitudes of high performing models only.

Conclusions

Witkin and Goodenough (1977) concluded that substantial evidence exists to indicate that "differences in social behavior between FI and FD persons are most likely to emerge when opportunities for direct experience of another are provided" (p. 673). None of the three studies provided for actual interaction with real people and, as such, represent weak tests of the issue. As Weiss and Nowicki (1981) noted, subjects' involvement with social information was relatively low. A more adequate laboratory design for testing the issue would include confederate coworkers as information providers.
Despite this weakness in design, the results provided by Weiss and Shaw (1979) strongly argue for the potential importance of FDI to job design theory and practice. Four general and mild affective statements, audible in the background, made by filmed models accounted for more variance in FD subjects' task perceptions than did task characteristics, yet the impact of social cues on FI subjects' perceptions was insubstantial. The FI subjects clearly showed a task orientation, with the task manipulation explaining 41% of the variance in task perceptions.

In the O'Connor and Barrett (1980) study, it is conceivable that demand characteristics may have overridden the possibility of finding an FDI x social cues interaction. The social cues provided were highly specific (e.g., You may "complete only a small repetitive portion of the task."). Furthermore, cues were provided by written and taped messages which is even less realistic than filmed models making task statements audible in the background.

The results of the Weiss and Nowicki (1981) study were unexpected in that FI persons were selectively influenced by social information; FI subjects' judgments apparently reflected the integration of all relevant information in the formation of task attitudes. This finding is inconsistent with the traditional characterization of the FI person and directly contradictory to Mausner and Graham's (1970) research suggesting that FI individuals are so individualistic that they are relatively impervious to social influence.
After a review of the SIPA literature, Blau and Katerberg (1982) called for further investigation of FDI as a moderator of social influence. While the empirical results are inconsistent, these authors cited FDI as the most promising of all the potentially relevant individual difference variables.

As compared to most personality measures, the FDI construct has a number of theoretical and methodological advantages; the utility of FDI for understanding the behavior of individuals has been demonstrated in diverse settings (e.g., education, therapy). The tremendous research investment in FDI, which is evident in the literature, is attributable to the well-developed theoretical framework in which the construct is embedded and to the existence of effective procedures for its assessment. As Mischel (1968) noted, the generality and stability of the measures of FDI are among the best available in personality research. It may be speculated that this results, in part, from the fact that measures of FDI assess maximum rather than typical performance (Clark, 1985a). Additionally, as compared to standard paper-and-pencil self-report measures of personality, FDI measures are more objective, less transparent, not subject to varied semantic meanings and related to a body of cognitive and developmental psychology (Gruenfeld & Arbuthnot, 1969). In the opinion of this author, further investigation of FDI as a moderator of social influence is warranted in view of the robustness of the construct itself and the quality of its instrumentation.
The Present Study

This study investigates the influence of FDI on the weights persons attach to task versus social information in the formation of task perceptions and attitudes in a laboratory setting.

A critical difference between this research and previous research lies in the mechanism that was used to transmit social information. While the use of taped or written comments for the delivery of social information may lessen the external validity of SIPA research in general, it is particularly deficient when investigating FDI. The literature indicates that differences between relatively FD and FI subjects are most likely to emerge when subjects interact with real people. Therefore, confederate coworkers were used to deliver task-related information in this study. Furthermore, in the previously cited studies, either general affective or task-specific statements were issued. It is believed that coworkers communicate attitudes in both general affective terms and by task-specific comments. Confederates delivered both types of cues in this study.

The present study differs from previous research in other respects as well. These differences are summarized below. In this study, task perceptions and attitudes were investigated. None of the three studies reviewed examined both task perceptions and attitudes. Also, the Weiss and Shaw (1979) study, which manipulated objective task characteristics, examined positive vs. neutral social cues. This study investigated positive vs. negative social cues. Neither the O'Connor and Barrett (1980) study nor the Weiss and Nowicki (1981) study manipulated objective task characteristics; O'Connor and Barrett
held the task constant, at a low level of enrichment. This study included an "enriched" and "unenriched" version of the task.

With regard to measurement of FDI, the Hidden Figures Test (HFT; Educational Testing Service, 1962) was used in this investigation. In the Weiss and Shaw (1979) and Weiss and Nowicki (1981) studies, an unpublished shortened version of the GEFT (Jackson, 1956) was employed. O'Connor and Barrett (1980) used the GEFT and the RFT to measure FDI.

This study used a group task whereas individual tasks were employed in the previous designs. A group task allows for high subject involvement with social information and, at the same time, is also well-suited to the delivery of social information in an unobtrusive manner. Also, as compared to the tasks used in these previous designs, it is expected that a higher level of cognitive complexity will be required by both the enriched and unenriched versions of the present task as a function of the content of the task. The present task will require subjects to make decisions about items in a managerial in-basket.

The implications of using a relatively complex task are twofold. First, job design research, and SIPA research specifically, have been criticized because "enrichment" is often trivial involving nothing more than making a dull routine task (e.g., data coding) slightly less dull and routine. In other words, there is a failure to design a truly enriched task. This raises questions about the generality of the findings in the literature. Furthermore, with regard to the SIPA literature specifically, it has been argued that the social cues
manipulations have frequently been stronger than the objective task manipulations (Blau & Katerberg, 1982). In this investigation, it is intended that the objective task manipulation will be strong resulting in substantial differences between task conditions. Second, it is expected that the use of a relatively complex task may enhance the probability of detecting a moderating effect of FDI on social influence. It is likely that task dimensions would be characteristically more ambiguous for a moderately complex task (e.g., decision making concerning managerial issues) as compared to a very mundane task (e.g., proofreading). Assessment of a relatively complex task may, therefore, be more susceptible to multiple interpretation depending upon which aspects of the task are made salient. As the ambiguity of a stimulus is increased, FD individuals are particularly inclined to incorporate social information in judgment formation. Consequently, the differences between FD and FI persons may be more likely to emerge when judgments about a relatively complex task are required.

Hypotheses. Four hypotheses are examined in this study. Two main effects and two interaction effects are considered. The predicted interaction effects are of central importance in this investigation. Graphical representations of the predicted relationships are in Appendix B.

Hypothesis 1
Task perceptions and attitudes of workers exposed to coworkers who deliver positive social cues about the task will be more positive than task perceptions and attitudes of those exposed to negative social cues.
Hypothesis 2
Task perceptions and attitudes of workers exposed to an "enriched" task will be more positive than task perceptions and attitudes of workers exposed to an "unenriched" task.

Hypothesis 3
Social cue favorability and FDI will interact to determine task perceptions and attitudes. Specifically, task perceptions and attitudes will be more negative for FD than FI persons when negative social cues are delivered; task perceptions and attitudes will be more positive for FD than FI persons when positive social cues are delivered.

Hypothesis 4
Objective task characteristics and FDI will interact to determine task perceptions and attitudes. Specifically, task perceptions and attitudes will be more negative for FI than FD persons when the task is "unenriched"; task perceptions and attitudes will be more positive for FI than FD persons when the task is "enriched".
CHAPTER 2

METHOD

Overview

A 2 x 2 orthogonal between-subjects design was combined with an individual difference measure (i.e., FDI) and used to investigate the influence of FDI on the weights persons attach to task and social information in the formation of task perceptions and attitudes. The independent variables included: (a) a task design variable - "enriched" vs. "unenriched", and (b) a social cues variable - positive vs. negative.

In a decision making task, subjects participated in groups of four persons including two confederates and two naive subjects. In half of the experimental sessions, subjects worked on an enriched version of the task. An unenriched version was presented in the other sessions. Within each of the task design conditions, half of the subjects were exposed to positive social cues, and half were exposed to negative social cues. The social cues were delivered via dialogues between the two confederates. After finishing the task, subjects completed a questionnaire assessing task perceptions and attitudes.

Subjects

Subjects were 40 male and 40 female introductory psychology students from The Ohio State University. Their participation was in partial fulfillment of course requirements. A large midwestern
university represents an appropriate population for the investigation of individual differences in that range restriction on the relevant variables is unlikely. As O'Connor et al. (1980) note, the failure to find individual difference moderating effects within the majority of job design investigations may be attributable to restriction of range on the relevant variables. Within intact work groups, restriction of individual difference as well as task variance may occur because (1) organizations often select individuals according to their individual characteristics, and (2) similar employees do tend to select themselves into common work settings that fit their needs and abilities (Crites, 1969).

Subjects were randomly assigned to experimental conditions, resulting in 20 subjects per condition. Randomization was accomplished by adhering to a preset schedule that counterbalanced the day and time that each experimental condition was given.

Task

A decision making task was employed in which subjects were required to make decisions, in a group setting, about items in a managerial in-basket. Sixteen independent items comprise the in-basket (located in Appendix C).

Procedure

Upon entering the laboratory, the two confederates and the two subjects were seated around a table containing all stimulus materials. Materials included an organization chart, in-basket instructions and 16 in-basket items. An item evaluation form was provided for each of the 16 items in the enriched task condition. In the
unenriched task condition, there were three folders labelled Segment I, II, and III, respectively. Each folder contained 16 in-basket items.

After the subjects were seated, the supervisor made an introduction and described the activities in which subjects were to participate. Subjects were led to believe that they were taking part in research on decision making and that the HFT was to be used as an indirect measure of decision making abilities. Introductory comments were made according to a prescribed script. Copies of the supervisor's opening remarks for both the enriched and unenriched task conditions are in Appendix D.

After the HFT was administered, the supervisor collected the tests and took them to another room, presumably for scoring. In actuality, the tests were not scored at this time. The participants were told that the person scoring highest on the HFT would be selected as the coordinator for the in-basket exercise. In fact, this provided a cover story for placing a confederate in the coordinator role. After the supervisor obtained the "test results", she asked a confederate to act as the coordinator. The supervisor then began reading the in-basket instructions aloud while the participants followed with their copies.

The in-basket exercise proceeded in the following manner. The group coordinator read each item aloud while the group members read silently. Then each person gave his or her opinion on each item. In the enriched task condition, the group members described the action(s) they would take for each in-basket item, their reasons
for such action(s) and then prioritized each item. The group coordinator summarized the group discussion and reflected consensus opinion on the item evaluation forms. In the unenriched task condition, the group members simply prioritized each item. Each person announced the rating he or she would assign to each item. The group did not attempt to arrive at a consensus rating. The in-basket administration guidelines for the supervisor and the in-basket instructions for participants for both task conditions are in Appendix E.

After the in-basket instructions were read, the supervisor observed the group as they worked on a practice in-basket item. Questions and/or problems were addressed. The supervisor informed subjects that 40 minutes had been allotted for the task and that she would return in 40 minutes to administer a questionnaire assessing their reactions to the task. The in-basket sessions were taped to encourage adherence to task instructions.

Social cues were delivered in very brief dialogues between the two confederates at selected points in time -- before, during and after task completion. The supervisor left the room twice, prior to the in-basket exercise, presumably to take the HFTs to be scored and to obtain the test results. Social cues were delivered during these exits, at a two-minute break scheduled during the in-basket exercise, and upon completion of the exercise but prior to the supervisor's return. The supervisor listened to the in-basket session through an intercom system to ensure confederates' adherence to the scripts and to monitor subject comments.
When subjects completed the in-basket exercise, the supervisor returned and administered a questionnaire assessing perceived task characteristics, general task satisfaction and internal motivation. Following completion of the questionnaire, subjects were debriefed. The major questions addressed in the study and the potential application of the results to the work world were described.

**Chronological listing of significant procedural events.**

1. The supervisor made an introduction and described the activities in which subjects were to participate.
2. The HFT was administered.
3. The supervisor left the room, presumably to have the HFTs scored. Social cues were delivered during this exit.
4. The supervisor returned and began reading the in-basket instructions.
5. Upon completion of the in-basket instructions, the supervisor left the room presumably to obtain the HFT test results. Social cues were delivered during this exit.
6. The supervisor returned, selected a coordinator for the in-basket exercise and observed the group as they worked on a practice in-basket item.
7. The group began the in-basket exercise which lasted 40 minutes. During the two-minute task break, and upon task completion, social cues were presented.
8. The supervisor returned to administer a task reactions questionnaire.
9. Subjects were debriefed.
Independent Variables

Task design. Job enrichment was manipulated by task information and procedures focusing on the five critical job characteristics suggested by Hackman and Oldham (1976): skill variety, task identity, task significance, autonomy and feedback. A definition of each dimension is followed by a description of the manner in which the task manipulations were accomplished.

It should be noted that in the course of pilot research, it became apparent that very substantial differences in objective task characteristics were necessary for subjects' perceptions of the core task dimensions to be significantly different between conditions. The lack of a frame of reference for assessing task dimensions, inherent in a between-subjects design, may explain this occurrence.

Skill variety: "The degree to which a job requires a variety of different activities in carrying out the work, which involve the use of a number of different skills and talents of the person" (Hackman & Oldham, 1976, p. 257).

Participants in the low enrichment condition rated the urgency or importance of each in-basket item on the following scale:

| 1 --------------- | 2 |
| High Priority | Low Priority |

The group was instructed to work on the task the entire 40 minutes and to go back through all 16 items, as often as time permitted, to reconsider their previous ratings. The confederates paced the sessions so that each group rated the 16 items 2 1/2-3 times.
In the high enrichment condition, participants specified the action(s) they planned to take on each item by checking the appropriate response on the evaluation forms (e.g., ignore or discard; seek more information). The reason(s) for their action(s) were briefly described, and each item was prioritized on the following scale:

<table>
<thead>
<tr>
<th>Action(s)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Must be</td>
<td>Could wait</td>
<td>Could wait</td>
<td>Not</td>
<td></td>
</tr>
<tr>
<td>taken</td>
<td>until</td>
<td>until</td>
<td>necessary</td>
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<tr>
<td>today</td>
<td>tommorrow</td>
<td>week or</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>later</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The in-basket item evaluation form, provided in the enriched condition, is in Appendix F.

The confederates paced the enriched sessions so that each group finished all 16 items with a few minutes of the 40-minute session remaining, to reconsider any items for which there was substantial difference of opinion.

Task identity: "The degree to which the job requires the completion of a "whole" and identifiable piece of work; that is, doing a job from beginning to end with a visible outcome" (p. 257).

Participants in the low enrichment condition were told that they would work on one segment of a 48-item in-basket. On the table were three folders, each containing 16 items. The folders were labelled Segment I, II, and III, respectively. Subjects were informed that they would work only on Segment I. In this condition, subjects had no visible outcome of their work. A consensus rating was not achieved, and the individual ratings were not written.
Participants in the high enrichment condition were told that they would be the only group working on this particular in-basket and were not led to believe that their in-basket was a segment of a larger in-basket. The group arrived at a consensus decision for each in-basket item, and an item evaluation form served as the written outcome of the group effort, reflecting the final decisions made for each item. Upon completion of the in-basket exercise, the supervisor collected the 16 evaluation forms, placed them in a folder and labelled the folder "Completed Items".

**Task significance:** "The degree to which a job has a substantial impact on the lives or work of other people, whether in the immediate organization or in the external environment" (p.257).

In the low enrichment condition, the supervisor introduced herself as a graduate student. Nothing was stated about the potential impact or importance of the research to other people.

In order to enhance the perceived significance of the research in the enriched condition, the supervisor introduced herself as a graduate student working on the project with a professor of psychology. Presumably, the professor was consulting with a large midwestern insurance company who was sponsoring the research. The supervisor explained that million dollar decisions are made by management teams, and consequently, industry has shown a growing interest in understanding the processes and personal characteristics (i.e., the HFT) that contribute to effective group decision making.

In the enriched condition, the in-basket was described as a tool commonly used by large organizations to measure decision making skills and abilities, and subjects were told that the issues found in the
in-basket were authentic although the names had been changed.

**Autonomy**: "The degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out" (p. 258).

In order to lessen discretion in carrying out the work, rigid criteria for assigning a rating of "1" or "2" to an item were provided for participants in the low enrichment condition. After the group evaluated all 16 in-basket items, they were instructed to reconsider the items in the exact same order. They were told that they must take a two-minute break halfway through the session. It was explained that one purpose of recording the session was to ensure that the group followed the outlined procedure exactly.

In the high enrichment condition, general guidelines for prioritizing the items were provided so that the operationalization of autonomy did not lead to ambiguity. It was emphasized that participants were to exercise their own discretion and judgment in deciding how to handle the issues and to pace themselves so as to complete all items. Subjects were instructed to determine, as a group, which items merited reconsideration upon completion of all 16 items. Also, subjects were told to decide, as a group, when to schedule their two-minute break. The confederates however ensured that the break was taken halfway through the session.

**Feedback**: "The degree to which carrying out the work activities required by the job results in the individual obtaining direct and clear information about the effectiveness of his or her performance" (p. 257).
Participants in the unenriched condition had no tangible outcome of their work and received no information about their performance.

In the enriched condition, subjects achieved a consensus decision for each item, and this decision was recorded on an item evaluation form. As a way of monitoring their progress and pacing themselves, the group was provided an in-basket, which contained the 16 evaluation forms, and an out-basket in which the coordinator placed the accomplished items/evaluation forms. The out-basket allowed the group to directly observe their performance output. Subjects were instructed to try to pace themselves so as to complete all 16 items. Performance standards were communicated to subjects in that they were told that they would be doing very well if they were able to accomplish this goal.

**Social cues.** Task-related cues were delivered in very brief dialogues between the two confederates. In all dialogues, confederates' statements were in agreement. Confederates delivered both general affective and task-specific comments to enhance realism. Social cues were delivered with moderate intensity, in conjunction with the appropriate behavioral cues of smiling, frowning, body posture and so on. Neutral comments were made at specified points in time as another mechanism for enhancing realism. Confederates issued general comments about whether the task appeared interesting and fun; a specific comment was issued for each of the five Hackman and Oldham (1976) task dimensions. An example of a dialogue in the positive cues condition is: "This sounds interesting - pretty involved." "Yeah, seems like this could be really important since you can't
experiment with decisions and stuff in a real company." The complementary dialogue in the negative cues condition is: "This sounds boring—really monotonous." "Yeah, seems really stupid to have psych 100 students work on this in-basket thing. I don't know how it could tell you anything." The scripts for the positive and negative social cue conditions are in Appendix G.

Subjects were led to believe that both confederates were business majors in their junior year and knew each other from previous coursework. It was expected that this would make their conversation more plausible and would reduce subjects' input to the conversation. Confederates were thoroughly rehearsed on the scripts and had practiced their cues in role playing sessions. Confederates were also trained to handle any subject input to the conversation. Subject comments were acknowledged, and confederates proceeded quickly with the scripts. Subjects' remarks were infrequent and typically insubstantial.

Operationalization of Field Dependence

The HFT was used to measure FDI in this study. The HFT is nearly identical to the EFT but more difficult and economical to use (Boersma, 1968). Both the HFT and EFT are adaptations of the Gottschaldt Figures Test (Gottschaldt, 1926). According to Boersma (1968), Messick and Witkin (1966) anticipated that the HFT would supercede usage of the GEFT.

The HFT was developed by ETS (1962) and consists of two 10-minute parts each containing 16 items. In each part of the HFT, 16 complex patterns are presented and subjects are required to locate one of five simple geometrical figures in each of the complex patterns. ETS
Barrett, Cabe, and Thornton (1968) reported a split-half reliability coefficient of .88. Boersma (1968) found HFT internal consistency (KR20) estimates comparable to those reported by Jackson, Messick, and Myers (1964) for the GEFT; test-retest reliability for 105 students over a 10-week interval was .63.

Initially, it was planned that the original GEFT (Witkin, Oltman, Raskin, & Karp, 1971) would be used in this study to facilitate comparison of results to prior research. Two of the three previous task design studies investigating FDI as a moderator of social influence had employed an unpublished shortened version of the GEFT (Jackson, 1956) and the third used the original GEFT and RFT. According to Weiss (1984) the original GEFT is superior as it provides more variance, results are easier to integrate into the literature and administration is better standardized. Piloting of the GEFT, however, indicated the presence of a substantial ceiling effect or negatively skewed distribution. Since the HFT is a more difficult restructuring test and, for this reason, generally more appropriate to the college population (Clark, 1985b), the instrument was piloted. With the HFT, a floor effect was observed; therefore, the administration time was increased from 10 minutes, which is standard, to 15 minutes in an effort to achieve a normal distribution. A normal distribution was obtained, and the HFT was selected for use.

Only Part I of the HFT was administered; Part II was not included due to time constraints. After the HFT instructions were read, subjects worked on two practice items provided in the test. When subjects worked
on the practice items, they were asked to cover the correct answers shown at the bottom of the page and were required to show the administrator the simple figures they had identified in the complex patterns. Boersma (1968) maintained that the HFT is a very difficult test and suggested that test-retest reliability could be enhanced if subjects were allowed more practice with the items and if correct responses were not presented on the same page with the practice items. Therefore, considerable time was devoted to the practice items; the administrator made certain that each subject fully understood the requirements of the test and had successfully completed the practice items prior to beginning the test.

Score was the number of items found in 15 minutes, corrected for error. The mean score on this 16-item scale was 6.10 with a standard deviation of 3.72. The minimum score was 0.0 and the maximum value was 14.0. These results are comparable to those reported by ETS (1976). In a study of 605 suburban 11th and 12th graders, the mean score on the two-part test was 15.0 with a standard deviation of 7.0. In a study of 167 college students, the mean score was 14.0 with a standard deviation of 6.4.

Ancillary Measures

On the HFT booklet, subjects were asked to report grade point average, ACT score and sex. It was intended that any variance in FDI scores predicted by GPA, ACT, and sex would be partialled from the FDI measure. As Cronbach (1960) noted, performance tests of personality generally contain an ability component which is irrelevant to the trait under study; therefore, control for general reasoning ability is
required. The GPA and ACT scores were intended to serve as indicants of general reasoning ability.

Information on sex was collected to determine whether it would be necessary to partial the effects of sex from the FDI measure in this particular sample. Witkin and Goodenough (1981) report that males tend to score higher than females on many tests of cognitive restructuring, but sex differences are very small for group forms of the test and usually significant only for very large samples. Boersma (1968) found no significant sex differences on the HFT.

Code numbers were used on the HFT booklets in place of names since GPA and ACT data were requested. It was intended that code numbers would ensure subjects of anonymity and thereby discourage intentional falsification of this data. Of the 80 subjects, 4 reported that they could not provide an accurate GPA score and 20 could not accurately recall an ACT score. Therefore, GPA/ACT data was obtained for a subset of the total sample.

Relevant to the issue of accuracy of self-reported scholastic achievement is a study conducted by Dunnette (1952). In this study, an engineering analogies test was administered to 203 college students. On the test answer sheet, subjects were asked to report their GPA scores. Actual GPA scores were subsequently obtained and compared to students' estimates. The Pearson correlation coefficient between the two measures was .94 which indicates a high degree of constancy of rank placement between self-reported and actual GPA scores. With respect to accuracy of self-reported GPA scores, it was found that only a subgroup of students' estimates were distorted; students whose actual
averages were below 1.00 tended to report somewhat inflated scores. Given the results reported by Dunnette and the anonymity of the GPA/ACT scores in the present study, there is reason to have confidence in the accuracy of the subjects' self-reported scores.

The correlation between ACT and GPA was computed and found not to be significantly different from zero, \( r = .14 \). Since ACT and GPA were apparently tapping different aspects of the higher-order construct "general reasoning ability", a GPA/ACT composite was not created.

In this sample, the zero-order correlations between HFT scores and GPA, ACT, and sex were not significant; the correlations were .11, .17, and .01, respectively. The FDI measure was regressed on these three variables. The \( F \) value for the model was not significant; only 3% of the variance in HFT scores was accounted for by these variables. General reasoning ability, as indicated by GPA and ACT, and sex, therefore, were unrelated to the FDI measure used in this study.

**Dependent Variables**

Measures of the dependent variables, task perceptions and attitudes, were gathered with a questionnaire instrument. Subjects responded to the items in the questionnaire using a 7-point Likert-type scale (disagree strongly = 1; agree strongly = 7). Items from the JCI (Sims et al., 1976) and JDS (Hackman & Oldham, 1975) were adapted and used when applicable. When necessary, original items were included. In addition, adaptations of the items used by Weiss and Nowicki (1981) to measure general satisfaction were included.

The task reactions questionnaire was divided into three sections. The first section asked subjects to describe the characteristics of
the group coordinator. It was intended that this section would enhance the credibility of the cover story, i.e., that this was a study about decision making. The second section assessed perceptions of skill variety, task identity, task significance, autonomy and feedback. Subjects were asked to describe the task as objectively as possible. The third section assessed general satisfaction and internal motivation; subjects were instructed to indicate how they personally felt about the task. Also, the third section contained items which served to assess the effectiveness of the social cues manipulation. The questionnaire and a listing of the items comprising the subscales is in Appendix H.

The internal consistency reliabilities for the summated variables (coefficient alpha, Cronbach, 1951) and their intercorrelations are presented in Table 1. All variables were sufficiently reliable with coefficients ranging from .71 to .94. The intercorrelations between variables were substantial as would be expected.
<table>
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<th>Variables</th>
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<th>6</th>
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</tr>
</thead>
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<td>2. Task Identity</td>
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<td>3. Task Significance</td>
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<tr>
<td>4. Autonomy</td>
<td>.54</td>
<td>.35</td>
<td>.37</td>
<td>.72</td>
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</tr>
<tr>
<td>5. Feedback</td>
<td>.63</td>
<td>.71</td>
<td>.58</td>
<td>.50</td>
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<td>6. MPS</td>
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<td>.69</td>
<td>.69</td>
<td>.75</td>
<td>.84</td>
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</tr>
<tr>
<td>7. General Satisfaction</td>
<td>.64</td>
<td>.40</td>
<td>.51</td>
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<td>.56</td>
<td>.63</td>
<td>.94</td>
<td></td>
</tr>
<tr>
<td>8. Internal Motivation</td>
<td>.42</td>
<td>.45</td>
<td>.47</td>
<td>.31</td>
<td>.46</td>
<td>.48</td>
<td>.58</td>
<td>.71</td>
</tr>
</tbody>
</table>

Note. Coefficient alpha reliabilities for the summated variables appear in the diagonal.

n = 80; all correlations are significant at p < .01.
CHAPTER III
RESULTS

This chapter is partitioned into three major sections. In the first section, the success of the task and social cues manipulations are examined. In the second section, results of the tests of the major hypotheses are reported. The last section presents auxiliary findings, not considered primary research questions at the inception of the study.

Regarding a decision rule for significance levels, probabilities of .05 or less will be considered significant for main effects, and probabilities of .10 or less will be considered significant for interaction effects. As Cohen (1977) has explained, the power to detect interactions is considerably lower than the power to detect main effects for any given sample size.

Manipulation Checks

Task design. The task enrichment characteristics were examined by having a separate control group of 20 subjects (n = 10 in the enriched and unenriched task conditions) experience the task without the social cues manipulation. These subjects were required to follow the same task procedures as in the actual experimental session and then rated the task using the task reactions questionnaire. Means, standard deviations, and \( t \) statistics are presented in Table 2.
Table 2  
Differences in Task Characteristics and Attitudes for Enriched and Unenriched Tasks

<table>
<thead>
<tr>
<th>Variables</th>
<th>Enriched Task</th>
<th></th>
<th>Unenriched Task</th>
<th></th>
<th>t^b</th>
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<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
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<tr>
<td>Skill Variety</td>
<td>4.79</td>
<td>.60</td>
<td>2.14</td>
<td>.67</td>
<td>9.24**</td>
</tr>
<tr>
<td>Task Identity</td>
<td>5.59</td>
<td>.68</td>
<td>2.80</td>
<td>1.00</td>
<td>7.30**</td>
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<tr>
<td>Task Significance</td>
<td>5.16</td>
<td>.83</td>
<td>3.38</td>
<td>1.20</td>
<td>3.87*</td>
</tr>
<tr>
<td>Autonomy</td>
<td>6.09</td>
<td>.62</td>
<td>2.87</td>
<td>.98</td>
<td>8.79**</td>
</tr>
<tr>
<td>Feedback</td>
<td>5.38</td>
<td>.74</td>
<td>2.92</td>
<td>1.00</td>
<td>6.28**</td>
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<tr>
<td>MPS</td>
<td>170.66</td>
<td>37.97</td>
<td>24.12</td>
<td>12.55</td>
<td>11.59**</td>
</tr>
<tr>
<td>General Satisfaction</td>
<td>4.90</td>
<td>.70</td>
<td>2.53</td>
<td>.65</td>
<td>7.87**</td>
</tr>
<tr>
<td>Internal Motivation</td>
<td>4.83</td>
<td>.97</td>
<td>2.37</td>
<td>1.20</td>
<td>5.05**</td>
</tr>
</tbody>
</table>

^a_n = 10 in each task condition.

^b One-tailed test.

*p < .001.

**p < .0001.
An examination of the results shown in Table 2 confirms the effectiveness of the task manipulation. Subjects in the enriched condition perceived the task to be significantly more enriched than subjects in the unenriched condition across all five core dimensions. Overall enrichment perceptions were significantly different between conditions as indicated by the motivating potential score (MPS) of each task. The MPS is a summary measure designed to reflect the overall potential of a job to prompt internal work motivation. The MPS score was computed using Hackman and Oldham's (1975) combinational formula:

\[
\text{Skill Task \hspace{1cm} Task variety} + \frac{\text{identity} + \text{significance}}{3} \times \text{Autonomy} \times \text{Feedback}
\]

In addition to the more positive perceptions of task characteristics, subjects working on the enriched task expressed higher levels of task satisfaction and internal motivation than subjects participating in the unenriched task which is congruent with Hackman and Oldham's (1976) job characteristics model.

Social cues. Checks on the social cues manipulation were obtained by 11 items included in the task reactions questionnaire. Items were included which asked subjects to assess the general satisfaction and internal motivation of their coworkers as well as coworker perceptions of specific core dimensions (e.g., "My coworkers were able to figure out how well we were doing on the task."). The questions which addressed the coworker perceptions of the specific core dimensions were placed at the end of the questionnaire to avoid sensitizing subjects to a major focus of the study.
Four of the 11 items were relevant to perceived coworker satisfaction; an index reflecting perceptions of coworker satisfaction was created by summing these four items (coefficient alpha = .93). Two items were summed to form an index reflecting perceived coworker internal motivation (coefficient alpha = .63). The differences between means on these two indices across the two cue conditions were significant, $t\ (78) = 14.26, p < .0001$ and $t\ (78) = 5.73, p < .0001$, respectively. T-tests were used to compare means across conditions for each of the five items addressing specific core dimensions; for each item, the mean difference between cue conditions was significant, $p < .005$.

These results confirm the effectiveness of the social cue manipulation. Subjects in the positive cues condition perceived their coworkers to have more positive task judgments and reactions than did subjects in the negative cues condition. An additional check on the social cues manipulation was also conducted within each task condition to ensure that there was no interaction between the effectiveness of the social cues manipulation and task condition. The results indicated that the manipulation was equally successful within each task condition.

Tests of the Major Hypotheses

Hypotheses 1 and 2. Hypothesis 1 predicted that task perceptions and attitudes of workers exposed to coworkers who deliver positive social cues would be more positive than task perceptions and attitudes of those exposed to negative social cues. Results of the analysis of variance testing this hypothesis are presented in Table 3 with
relevant cell means displayed in Table 4. The five core task dimensions were sufficiently intercorrelated to focus on the MPS as an overall indicant of task perceptions.

The main effect of social cues on MPS was significant, $F(1,76) = 32.12$, and accounted for 21% of the MPS variance. Social cues had a significant effect on all five core dimensions. With respect to task attitudes, the main effect of social cues was significant for general satisfaction, $F(1,76) = 84.88$, and internal motivation, $F(1,76) = 18.13$. Social cues explained 49% of the variance in satisfaction and 19% of the variance in motivation. These results support Hypothesis 1. Averaged across task conditions, social cues had a significant effect on subject task perceptions and attitudes.

Hypothesis 2 predicted that task perceptions and attitudes of workers exposed to an "enriched" task would be more positive than task perceptions and attitudes of workers exposed to an "unenriched" task. The main effect of task enrichment on MPS was significant, $F(1,76) = 35.24$, and explained 23% of the MPS variance. The task had a significant effect on perceptions of all core dimensions except task identity ($p < .10$). With regard to task attitudes, the main effect of task was significant only for general satisfaction, $F(1,76) = 11.41$, and accounted for 7% of the variance. Hypothesis 2 therefore did not receive full support; the task main effect was not significant for perceptions of task identity or for internal motivation.

In summary, social cues and objective task characteristics accounted for almost equal amounts of variance in MPS, 21% and 23%, respectively. Social cues, however, had a far more powerful impact on
Table 3
The Effects of Task Characteristics and Social Cues on MPS, General Satisfaction, and Internal Motivation

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>$W^2$</th>
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</thead>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MOTIVATING POTENTIAL SCORE</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>58946.50</td>
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<td>.23</td>
</tr>
<tr>
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<td>53732.57</td>
<td>35.12***</td>
<td>.21</td>
</tr>
<tr>
<td>Task x Cues</td>
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<td>12632.82</td>
<td>7.55*</td>
<td>.05</td>
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<tr>
<td>Residual</td>
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<td>1672.81</td>
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<td></td>
</tr>
<tr>
<td><strong>GENERAL SATISFACTION</strong></td>
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</tr>
<tr>
<td>Task</td>
<td>1</td>
<td>11.86</td>
<td>11.41**</td>
<td>.07</td>
</tr>
<tr>
<td>Cues</td>
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<td>88.20</td>
<td>84.88***</td>
<td>.49</td>
</tr>
<tr>
<td>Task x Cues</td>
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<td>.10</td>
<td>0.09</td>
<td>.00</td>
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<tr>
<td>Residual</td>
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<td>1.04</td>
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<td><strong>INTERNAL MOTIVATION</strong></td>
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<td></td>
</tr>
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<td>.01</td>
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<td>.19</td>
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<td>.93</td>
<td>.00</td>
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<tr>
<td>Residual</td>
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<td>1.70</td>
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</table>

* $p < .01$.
** $p < .001$.
*** $p < .0001$. 
Table 4

Cell Means and Standard Deviations

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<tr>
<th></th>
<th>Positive Cues</th>
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<th>Negative Cues</th>
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<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
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<td>57.22</td>
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<td>1.46</td>
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<td>1.02</td>
<td>3.75</td>
<td>1.20</td>
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<td>1.27</td>
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<td></td>
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<td>50.42</td>
<td>42.87</td>
<td>63.77</td>
<td>41.08</td>
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<td>1.13</td>
<td>2.82</td>
<td>.98</td>
<td>3.85</td>
<td>1.46</td>
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<td>3.48</td>
<td>1.57</td>
<td>4.09</td>
<td>1.58</td>
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<td>1.05</td>
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<td>Internal Motivation</td>
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<td>1.20</td>
<td>3.62</td>
<td>1.38</td>
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</table>
task attitudes than did the task itself. Social cues explained 49% of the variance in general satisfaction whereas the task accounted for only 7%. With respect to internal motivation, social cues explained 19% of the variance and the task accounted for only 1%.

While not predicted, an interaction between task characteristics and social cues was observed for MPS, $F(1,76) = 7.55$, and accounted for 5% of the variance in task perceptions. The interaction effect was significant at the .05 level for only one of the five core dimensions, skill variety. The interaction effect was significant for task significance at the .06 level. A task x cues interaction was not observed for either of the task attitudes. To investigate the interaction of task and cues on MPS, the simple effect of cues was examined at each level of task, and the simple effect of task was examined at each level of cues.

The Least Significant Difference statistic indicated that both simple effects were significant at the .05 level. While both simple effects were significant, cell means indicate that the effect of cues was more pronounced in the enriched than unenriched task condition, and the effect of task was stronger when positive cues were delivered. The interaction is graphically displayed in Figure 1.
Hypotheses 3 and 4. Hierarchical multiple regression (i.e., moderated regression) was used to test Hypotheses 3 and 4. The literature supports moderated regression as the most effective procedure for investigating such predictions, both from a conceptual and statistical point of view (e.g., Arnold, 1984; Stone & Hollenbeck, 1984). Moderated regression involves the entry of a cross-product term after the main effect terms are in the model. The technique allows for the calculation of the amount of unique variance in the dependent variable attributable to the interaction term.

Hypothesis 3 predicted that social cue favorability and FDI would interact to determine task perceptions and attitudes. To examine Hypothesis 3, MPS, general satisfaction and internal motivation were regressed on the task, social cues, and FDI variables. The product of social cues and FDI was added to the regression equation next to determine if the interaction term contributed significantly to
the prediction of task perceptions and attitudes. Table 5 presents the results of the analysis.

The semipartial correlation coefficient associated with the interaction term was not significant in predicting MPS, general satisfaction or internal motivation. Also, the interaction term did not account for a significant amount of variance in any of the five individual task dimensions. Hypothesis 3 was not supported; the FDI x social cues interaction did not contribute to a significant increment in overall $R^2$ for task perceptions and attitudes.

Hypothesis 4 predicted that objective task characteristics and FDI would interact to determine task perceptions and attitudes. To investigate Hypothesis 4, MPS, general satisfaction and internal motivation were regressed on the task, social cues and FDI variables. The product of task and FDI was added to the regression equation next to determine if the interaction term contributed significantly to the prediction of task perceptions and attitudes. The results of this analysis are shown in Table 6.

The semipartial correlation coefficient associated with the interaction term was not significant in predicting MPS, general satisfaction or internal motivation. The interaction term did not account for a significant amount of variance in any of the five individual core dimensions. Hypothesis 4 was not supported; the FDI x task interaction did not contribute to a significant increment in overall $R^2$ for any of the dependent variables.
Table 5
Hierarchical Multiple Regression
Investigating the Effect of FDI x Social Cues on MPS, General Satisfaction, and Internal Motivation

<table>
<thead>
<tr>
<th>Regression Steps</th>
<th>df</th>
<th>F</th>
<th>Overall R²</th>
<th>Increment in R² Associated with Interaction term</th>
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</thead>
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<td><strong>MOTIVATING POTENTIAL SCORE</strong></td>
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<td></td>
<td></td>
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<tr>
<td>1. Task Social Cues FDI</td>
<td>3,76</td>
<td>20.44**</td>
<td>.447</td>
<td></td>
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<tr>
<td>2. Task Social Cues FDI FDI x Social Cues</td>
<td>4,75</td>
<td>15.25**</td>
<td>.449</td>
<td>.002</td>
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<tr>
<td><strong>GENERAL SATISFACTION</strong></td>
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</tr>
<tr>
<td>1. Task Social Cues FDI</td>
<td>3,76</td>
<td>32.12**</td>
<td>.559</td>
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</tr>
<tr>
<td>2. Task Social Cues FDI FDI x Social Cues</td>
<td>4,75</td>
<td>23.95**</td>
<td>.560</td>
<td>.001</td>
</tr>
<tr>
<td><strong>INTERNAL MOTIVATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Task Social Cues FDI</td>
<td>3,76</td>
<td>6.80*</td>
<td>.212</td>
<td></td>
</tr>
<tr>
<td>2. Task Social Cues FDI FDI x Social Cues</td>
<td>4,75</td>
<td>5.15*</td>
<td>.215</td>
<td>.003</td>
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</table>

*p < .001.

**p < .0001.
Table 6
Hierarchical Multiple Regression
Investigating the Effect of FDI x Task
on MPS, General Satisfaction, and Internal Motivation

<table>
<thead>
<tr>
<th>Regression Steps</th>
<th>df</th>
<th>F</th>
<th>Overall $R^2$</th>
<th>Increment in $R^2$ Associated with Interaction Term</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MOTIVATING POTENTIAL SCORE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Task Social Cues FDI</td>
<td>3,76</td>
<td>20.44**</td>
<td>.447</td>
<td></td>
</tr>
<tr>
<td>2. Task Social Cues FDI FDI FDI x Task</td>
<td>4,75</td>
<td>15.84**</td>
<td>.458</td>
<td>.011</td>
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<tr>
<td><strong>GENERAL SATISFACTION</strong></td>
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<tr>
<td>1. Task Social Cues FDI</td>
<td>3,76</td>
<td>32.12**</td>
<td>.559</td>
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<tr>
<td>2. Task Social Cues FDI FDI FDI x Task</td>
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<td>23.86**</td>
<td>.560</td>
<td>.001</td>
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<tr>
<td><strong>INTERNAL MOTIVATION</strong></td>
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<tr>
<td>1. Task Social Cues FDI</td>
<td>3,76</td>
<td>6.80*</td>
<td>.212</td>
<td></td>
</tr>
<tr>
<td>2. Task Social Cues FDI FDI FDI x Task</td>
<td>4,75</td>
<td>5.57*</td>
<td>.229</td>
<td>.017</td>
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</table>

*p < .001.

**p < .0001.
Although no overall or main effects of FDI had been hypothesized, the relationships between FDI and task perceptions and attitudes were examined. The zero-order correlations between FDI and task perceptions and attitudes were non-significant. (As would be expected given random assignment of subjects to conditions, the correlations between FDI and task condition and FDI and cue condition were non-significant.) Using a hierarchical regression procedure, the effect of FDI on task perceptions and on attitudes was investigated with the effects of task and social cues partialled. The entry of FDI into a model containing the task and cues variables resulted in a non-significant increment in \( R^2 \) for task perceptions and attitudes.

The three-way interaction between task, cues, and FDI was also examined and found to be non-significant. The entry of this second-order interaction into a model containing the task, social cues and FDI variables, and all possible first-order interactions, resulted in a non-significant increment in \( R^2 \) for task perceptions and attitudes. Presented in Table 7 are the results of an analysis in which task perceptions and attitudes were regressed on all three variables, and their interactions, in the order shown.
Table 7

The Effects of Task, Cues, FDI, and their Interactions on MPS, General Satisfaction, and Internal Motivation

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Task</td>
<td>1</td>
<td>58946.50</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>11.86</td>
<td>11.00**</td>
</tr>
<tr>
<td>Cues</td>
<td>1</td>
<td>88.20</td>
<td>81.81***</td>
</tr>
<tr>
<td>FDI</td>
<td>1</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td>Task x Cues</td>
<td>1</td>
<td>0.10</td>
<td>0.09</td>
</tr>
<tr>
<td>Task x FDI</td>
<td>1</td>
<td>0.19</td>
<td>0.18</td>
</tr>
<tr>
<td>Cues x FDI</td>
<td>1</td>
<td>0.31</td>
<td>0.29</td>
</tr>
<tr>
<td>Task x Cues x FDI</td>
<td>1</td>
<td>0.76</td>
<td>0.70</td>
</tr>
<tr>
<td>Residual</td>
<td>72</td>
<td>1.08</td>
<td></td>
</tr>
<tr>
<td><strong>INTERNAL MOTIVATION</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task</td>
<td>1</td>
<td>1.70</td>
<td>1.00</td>
</tr>
<tr>
<td>Cues</td>
<td>1</td>
<td>30.83</td>
<td>18.19***</td>
</tr>
<tr>
<td>FDI</td>
<td>1</td>
<td>1.72</td>
<td>1.02</td>
</tr>
<tr>
<td>Task x Cues</td>
<td>1</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Task x FDI</td>
<td>1</td>
<td>2.80</td>
<td>1.65</td>
</tr>
<tr>
<td>Cues x FDI</td>
<td>1</td>
<td>0.71</td>
<td>0.42</td>
</tr>
<tr>
<td>Task x Cues x FDI</td>
<td>1</td>
<td>1.96</td>
<td>1.16</td>
</tr>
<tr>
<td>Residual</td>
<td>72</td>
<td>1.70</td>
<td></td>
</tr>
</tbody>
</table>

* p < .01.
** p < .001.
*** p < .0001.
Auxiliary Findings

While the findings reported in this section were not considered primary research questions at the inception of this study, they are nonetheless relevant to understanding the role that individual differences play in the formation of task perceptions and attitudes. As previously described, individual difference measures of ACT, GPA and sex were collected to determine the relationship between FDI and each of these variables; of the 80 subjects, 60 reported an ACT score and 76 reported a GPA. The effects of these individual difference variables on task perceptions and attitudes were explored.

The zero-order correlations of ACT, GPA and sex with task perceptions and attitudes were found to be non-significant. In a hierarchical procedure, the separate entry of ACT, GPA and sex into a model containing the task and social cues variables resulted in a non-significant increment in $R^2$ for task perceptions and attitudes. Moderated regression was used to investigate the possible interactive effects of each of these variables with social cues and with task design in predicting task perceptions and attitudes. The procedure was the same as that used to investigate the moderating role of FDI. In step 1, the main effects of task, cues, and the relevant individual difference variable were entered into the regression equation. In step 2, the interaction term was entered into the model.

Three significant interaction effects were observed. (None of the second-order interactions between task, cues, and the individual difference measures were significant.) An interaction between ACT and social cues and between GPA and social cues contributed to explained variance
in MPS. An interaction between GPA and task contributed to explained variance in internal motivation. The semipartial correlation coefficient associated with the ACT x social cues interaction term was significant, $t (55) = 2.02, p < .05$. The results of the moderated regression analysis investigating the effect of ACT x social cues on task perceptions and attitudes is displayed in Table 8. As shown in Table 8, the increment in $R^2$ attributable to the interaction term was significant for MPS but not for task attitudes. ACT x social cues explained an additional 4% of the MPS variance over the variance accounted for by the main effects of task, cues, and ACT.

The nature of the ACT x social cues interaction is shown in Figure 2 (not drawn to scale). The slopes of the regression lines are indicated.

![Figure 2: The Effect of ACT x Social Cues on MPS](image-url)
Table 8
Hierarchical Multiple Regression
Investigating the Effect of ACT x Social Cues
on MPS, General Satisfaction, and Internal Motivation

<table>
<thead>
<tr>
<th>Regression Steps</th>
<th>df</th>
<th>F</th>
<th>Overall R²</th>
<th>Increment in R² Associated with Interaction term</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOTIVATING POTENTIAL SCORE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Task Social Cues ACT</td>
<td>3,56</td>
<td>17.09***</td>
<td>.478</td>
<td></td>
</tr>
<tr>
<td>2. Task Social Cues ACT ACT x Social Cues</td>
<td>4,55</td>
<td>14.55***</td>
<td>.514</td>
<td>.036*</td>
</tr>
<tr>
<td>GENERAL SATISFACTION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Task Social Cues ACT</td>
<td>3,56</td>
<td>22.48***</td>
<td>.546</td>
<td></td>
</tr>
<tr>
<td>2. Task Social Cues ACT ACT x Social Cues</td>
<td>4,55</td>
<td>16.56***</td>
<td>.546</td>
<td>.000</td>
</tr>
<tr>
<td>INTERNAL MOTIVATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Task Social Cues ACT</td>
<td>3,56</td>
<td>4.44**</td>
<td>.192</td>
<td></td>
</tr>
<tr>
<td>2. Task Social Cues ACT ACT x Social Cues</td>
<td>4,55</td>
<td>3.28*</td>
<td>.193</td>
<td>.001</td>
</tr>
</tbody>
</table>

*P < .05.
**P < .01.
***P < .001.
Table 9 below shows the predicted values of MPS for selected values of ACT and social cues and reveals the nature of the interaction. Following the procedure described by Peters and Champoux (1979) and by Ganster (1980), values corresponding to ±1 standard deviation and the mean of ACT and the two values corresponding to cue condition were substituted into the regression equation.

Table 9
Predicted Values of MPS for Selected Values of ACT and Social Cues

<table>
<thead>
<tr>
<th>ACT Score</th>
<th>-1 SD</th>
<th>Mean (X)</th>
<th>+1 SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Cues</td>
<td>169.36</td>
<td>150.13</td>
<td>130.90</td>
</tr>
<tr>
<td>Negative Cues</td>
<td>89.49</td>
<td>94.24</td>
<td>98.99</td>
</tr>
</tbody>
</table>

As illustrated in Figure 2 and Table 9, persons with low ACT scores had more positive task perceptions when the social cues were positive than did persons with high ACT scores. When the cues were negative, persons with low ACT scores had lower MPS scores than persons with high ACT scores. Subjects with lower ACT scores, therefore, were more susceptible to social influence effects than were those with higher ACT scores.

The semipartial correlation coefficient associated with the GPA x social cues interaction term was significant for MPS, $t (71) = 1.71$, $p < .09$. Table 10 displays the results of the moderated regression
analysis investigating the effects of GPA x social cues on task perceptions and attitudes. The interaction effect was significant for MPS but not for task attitudes. The interaction term explained an additional 2\% of the MPS variance over the contribution of the main effects of task, social cues and GPA.

Although a 2\% increase in explained variance may appear trivial, even small \( R^2 \) changes due to significant interactions may be of practical value in understanding workers' responses to job design (O'Connor et al., 1980). Peters and Champoux (1979) maintain that researchers should further investigate a significant interaction effect regardless of the actual increment in \( R^2 \) when using the moderated regression technique.

The nature of the GPA x social cues interaction is shown in Figure 3 (not drawn to scale) and the predicted MPS values for selected values of GPA and social cues are displayed in Table 11. When positive cues were given, persons with low GPA scores had higher MPS scores than persons with high GPA scores. When negative social cues were delivered, persons with low GPA scores had lower MPS scores than persons with high GPA scores. Therefore, persons with low GPA scores were more susceptible to social influence effects than were those with high GPA scores.
Table 10
Hierarchical Multiple Regression
Investigating the Effect of GPA x Social Cues
on MPS, General Satisfaction, and Internal Motivation

<table>
<thead>
<tr>
<th>Regression Steps</th>
<th>df</th>
<th>F</th>
<th>Overall $R^2$</th>
<th>Increment in $R^2$ Associated with Interaction term</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MOTIVATING POTENTIAL SCORE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Task</td>
<td>3,72</td>
<td>19.43****</td>
<td>.447</td>
<td></td>
</tr>
<tr>
<td>Social Cues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Task</td>
<td>4,71</td>
<td>15.69****</td>
<td>.469</td>
<td>.022*</td>
</tr>
<tr>
<td>Social Cues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA x Social Cues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GENERAL SATISFACTION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Task</td>
<td>3,72</td>
<td>30.94****</td>
<td>.563</td>
<td></td>
</tr>
<tr>
<td>Social Cues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Task</td>
<td>4,71</td>
<td>22.91****</td>
<td>.563</td>
<td>.000</td>
</tr>
<tr>
<td>Social Cues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA x Social Cues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INTERNAL MOTIVATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Task</td>
<td>3,72</td>
<td>5.99***</td>
<td>.200</td>
<td></td>
</tr>
<tr>
<td>Social Cues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Task</td>
<td>4,71</td>
<td>4.44**</td>
<td>.200</td>
<td>.000</td>
</tr>
<tr>
<td>Social Cues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPA x Social Cues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .09.
**p < .01.
***p < .001.
****p < .0001.
The results of the moderated regression investigating the effect of GPA x task on task perceptions and attitudes is presented in Table 12. The semipartial correlation coefficient associated with the interaction term was significant for internal motivation, \( r (71) = 2.16, p < .05 \). Exploration of the interaction revealed that the
### Table 12
Hierarchical Multiple Regression
Investigating the Effect of GPA x Task on MPS, General Satisfaction, and Internal Motivation

<table>
<thead>
<tr>
<th>Regression Steps</th>
<th>df</th>
<th>F</th>
<th>Overall $R^2$</th>
<th>Increment in $R^2$ Associated with Interaction term</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MOTIVATING POTENTIAL SCORE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Task Social Cues GPA</td>
<td>3,72</td>
<td>19.43***</td>
<td>.447</td>
<td></td>
</tr>
<tr>
<td>2. Task Social Cues GPA GPA x Task</td>
<td>4,71</td>
<td>14.75***</td>
<td>.454</td>
<td>.007</td>
</tr>
<tr>
<td><strong>GENERAL SATISFACTION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Task Social Cues GPA</td>
<td>3,72</td>
<td>30.94***</td>
<td>.563</td>
<td></td>
</tr>
<tr>
<td>2. Task Social Cues GPA GPA x Task</td>
<td>4,71</td>
<td>23.12***</td>
<td>.566</td>
<td>.003</td>
</tr>
<tr>
<td><strong>INTERNAL MOTIVATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Task Social Cues GPA</td>
<td>3,72</td>
<td>5.99**</td>
<td>.200</td>
<td></td>
</tr>
<tr>
<td>2. Task Social Cues GPA GPA x Task</td>
<td>4,71</td>
<td>5.89**</td>
<td>.249</td>
<td>.049*</td>
</tr>
</tbody>
</table>

*P < .05.
**P < .001.
***P < .0001.
The effect of GPA x task on internal motivation is counterintuitive and contrary to the job characteristics model if one assumes that GPA reflects need for achievement moderated by ability.

As shown in Figure 4 (not drawn to scale) and Table 13, persons with high GPA scores were more internally motivated working on the unenriched task than on the enriched task; conversely, persons with low GPA scores were more internally motivated working on the enriched task than on the unenriched task.

![Graph showing the effect of GPA x task on internal motivation. The graph illustrates that higher GPA scores are associated with higher internal motivation for the unenriched task and lower internal motivation for the enriched task. The correlation coefficients are +.67 for the unenriched task and -.62 for the enriched task.]

Figure 4: The Effect of GPA x Task on Internal Motivation
Table 13
Predicted Values of Internal Motivation for Selected Values of GPA and Task

<table>
<thead>
<tr>
<th>GPA</th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1 SD</td>
<td>+1 SD</td>
</tr>
<tr>
<td>Enriched Task</td>
<td>5.31</td>
</tr>
<tr>
<td></td>
<td>4.40</td>
</tr>
<tr>
<td>Unenriched Task</td>
<td>4.40</td>
</tr>
</tbody>
</table>
CHAPTER IV
DISCUSSION

This chapter is organized into four sections. The first section presents interpretation of the findings regarding the major hypotheses. The effects of social cues and task design on task perceptions and attitudes are discussed. This is followed by a discussion of the investigation of the effect of FDI in determining the relative weights attached to task versus social information in the formation of task perceptions and attitudes. Plausible explanations for the failure to find a significant effect of FDI are mentioned. The second section provides interpretation of the auxiliary findings including observed individual differences in susceptibility to social cues and in reaction to task design. In the third section, potential directions for future research are mentioned. In the final section, concluding remarks are presented.

Interpretation of Major Hypotheses

The effects of social cues and task design. The prediction that social cues would affect task perceptions was fully supported by the present findings. The results indicated that social information had nearly as strong an effect on MPS scores as did the objective properties of the task. Social cues explained 21% of the variance
The perceptions of all five core dimensions were significantly affected by social information. The prediction that task design would affect task perceptions was also supported in that the task accounted for 23% of the variance in MPS; however, the perception of task identity was not significantly affected by task design.

An interaction between task characteristics and social cues was observed and explained 5% of the variance in MPS. While the impact of cues was significant at both levels of task, cues had a more pronounced effect in the enriched condition. The most plausible explanation for this finding is that a "floor" effect was operating, to some extent, in the unenriched task. Within the unenriched task condition, there was a difference of 27 points between the mean MPS scores in the positive cues condition ($\bar{x} = 77$) and negative cues condition ($\bar{x} = 50$). However, in the enriched task condition, there was a 77-point spread between MPS means in the positive cues condition ($\bar{x} = 157$) and negative cues condition ($\bar{x} = 80$). While it is not possible to know the mean MPS scores of the enriched and unenriched task conditions had social cues not been provided, it may be speculated that there was a greater limit on the degree to which positive social cues could raise task perceptions in the unenriched task condition as compared to the degree to which negative social cues could lower task perceptions in the enriched task condition.

The presence of this interaction provides some support for the assumption made in the introduction that an increase in task complexity (at least to a point) may increase the ambiguity of task characteristics. Apparently, this operates even within the range of complexity
represented by the two versions of the task presented in this study. As an example, consider the attempts to socially influence the perceptions of skill variety in each version of the task. In the enriched task condition, a coworker can make salient the fact that the in-basket will give the group "a chance to use a lot of different skills you need in a real job"; or the coworker can make note of the fact that the group "will have to keep doing the same thing over and over" in that they will be performing the same operations on 16 items. In the unenriched version, it seems reasonable that perceptions of skill variety would be somewhat less susceptible to these alternative interpretations in that the group has to rate the same 16 items 2½-3 times. As Salancik and Pfeffer (1978) note, the more ambiguous the task characteristics, the more workers will rely on social information.

With regard to task attitudes, full support was found for the impact of social cues. Social cues accounted for 49% of the variance in general satisfaction and 19% of the variance in internal motivation. The prediction that task design would affect task attitudes was only partially supported. Task characteristics explained 7% of the variance in satisfaction and a non-significant 1% in internal motivation. (The significant task x GPA interaction for internal motivation is discussed later.)

That the task had such a relatively minor effect on task attitudes was unexpected since both the manipulation check and the perceptions of actual subjects (i.e., MPS) showed a significant enrichment effect. The manipulation check confirmed that there were not only significant but also substantial differences between the two versions of the task. In
the enriched condition, the mean ratings on the core dimensions ranged from 4.79 to 6.09 on a 7-point scale; in the unenriched condition, the range was from 2.14 to 3.38. Nevertheless, the critical factor in determining subjects' affective reactions to the task was information from coworkers. The coworkers presumably provided a frame of reference regarding how to evaluate or feel about the characteristics of the task.

Two other laboratory studies have independently manipulated social cues and task design and determined their relative effects on both task perceptions and task attitudes. These results can be compared to the present findings. O'Reilly and Caldwell (1979) found that social cues were the major determinants of both task perceptions and task satisfaction. White and Mitchell (1979) investigated MPS, task satisfaction and internal motivation. There was a significant effect of task on MPS but the effect of cues on MPS was only marginally significant ($p < .07$). The task, however, had no effect on satisfaction (which is incongruent with Hackman and Oldham's model), but social cues did. Neither task nor cues had an effect on internal motivation. Apparently, social cues can influence affective reactions directly by providing a frame of reference about how to react to task properties. This finding, in conjunction with the present finding, points to the importance of collecting both perceptual and affective responses in SIP research. Since the potency of the task and social cue manipulations are not known, a precise determination of the relative magnitude of the effect of task versus cues is not possible. What is clear from these findings is that the effect of social information is critical to an understanding of the processes by which workers make judgments about their jobs, and
practitioners do need to be attentive to the power of social influence to bring about the desired results in task design.

A determination of the factors that affect the extent to which social cues affect task perceptions and attitudes is necessary to achieve a more complete understanding of social information processing and to maximize the effectiveness of job design procedures. The primary purpose of the present study was to investigate the degree to which FDI affects the weights persons attach to task versus social information in the formation of task perceptions and attitudes. A discussion of the effect of FDI follows.

The effect of FDI. The present results provided no support for the predictions that FD persons would be more susceptible to social influence than FI persons and that FI persons would be more attentive to task characteristics than FD persons in the development of task perceptions and attitudes.

Given the mixed findings in the literature, Blau and Katerberg (1982) called for further research on FDI as a moderator variable. It was believed that none of the previous studies provided an adequate test of the issue and that the generalizability of the findings was questionable. It was expected that the present study could clarify the issue by designing conditions so as to optimize the probability of detecting an effect of FDI if one exists. A significant improvement in the design of this study, as compared to prior research, included the use of confederate coworkers as information-providers. Prior research used filmed models and written/taped messages to transmit social information. The literature on FDI suggests that differences
between relatively FD and FI persons are more likely to emerge when subjects interact with real people. Also, the group nature of the task was expected to increase subject involvement with social information and to simultaneously provide social information in an unobtrusive manner. The task used in this study was relatively complex, and it was expected that differences between relatively FD and FI persons would be most likely to emerge when judgments about a relatively complex stimulus were required.

Despite the postulated improvements in the design of this study, no effect of FDI was detected. The robustness of the FDI construct and the quality of its instrumentation, in conjunction with the powerful effect of FDI demonstrated in the Weiss and Shaw (1979) investigation, provided the impetus for the present study. It was suspected that O'Connor and Barrett (1980) failed to find an effect of FDI because the use of extremely dimension-specific written/taped messages may have created experimental demand characteristics which overwhelmed any response differences between FD and FI persons. This study avoided such a potential confound by the use of coworkers as information-providers.

Plausible explanations for the failure to find an effect of FDI in this investigation will be mentioned although it is recognized that attempting to interpret non-significant results is always tenuous. It is possible that the combination of the potency (quantity, distribution) of the social cues and the ambiguity of the task overwhelmed potential differences in FD and FI subjects. In other words, the factors that were intended to enhance the probability of detecting an effect may have overridden any effect of FDI. It is worth noting that the potency of
the social cue manipulation used by Weiss and Shaw was weaker than the O'Connor and Barrett manipulation and weaker than the manipulation used in this study. Weiss and Shaw had filmed models deliver four very mild affective cues, audible in the background, prior to subjects' work on the task. In this study and in the O'Connor and Barrett study, a greater number of cues were issued, and the cues were distributed throughout the experimental sessions.

Under the circumstances present in this study, FDI was not predictive of the weights individuals attach to task versus social information in the formation of task perceptions and attitudes. It is hoped that the present results will not deter further research in the area but rather encourage researchers to determine the situational factors (e.g., saliency of social cues, task ambiguity) which impinge on the potential moderating effect of FDI, as well as other personality variables. Obviously, this research was subject to all the limitations inherent in a laboratory study and to the external validity considerations specific to SIP research conducted in the laboratory.

**Interpretation of Auxiliary Findings**

**Individual differences in susceptibility to social influence.**

Social cue favorability and ACT, and social cue favorability and GPA were found to interact to determine task perceptions. Specifically, task perceptions were more negative for persons with low ACT and GPA scores when negative social cues were delivered; in contrast, task perceptions were more positive for individuals with low ACT and GPA scores when positive social cues were delivered. With respect to task attitudes, persons with low ACT and GPA scores were no more susceptible
to social influence than were those with high ACT and GPA scores. Although it was easier for coworkers to influence low GPA/ACT persons' beliefs about the properties of the task, there was no difference between those with high versus low GPA/ACT scores in the degree to which social information could influence affective reactions to the task.

GPA and ACT, while imperfect measures, are tapping aspects of mental ability or intelligence. Therefore, these results indicate that it is more difficult for social information to influence task perceptions of higher ability subjects. O'Connor and Barrett (1980) also found some evidence that the effect of social information is moderated by mental ability. Task perceptions were measured by the Attribute Description Scale (ADS) and the Work Itself/Work Environment Description Scale (WIWE). Mental ability was assessed using the Wesman Personnel Classification Test which measures verbal reasoning and numerical ability. Mental ability significantly interacted with social cues in determining task perceptions as measured by the ADS but not the WIWE; higher ability subjects were more likely to ignore social information when it was inconsistent with their own appraisal. A main effect of mental ability was observed for the WIWE in that higher ability subjects perceived the task as less enriched. That scores on the Wesman Test and GPA and ACT have been found to moderate the impact of social cues on task perceptions indicates that low as compared to high ability subjects are more likely to assimilate social information in developing perceptions of task properties.

Individual differences in reaction to task design. The moderating role of GPA on task perceptions and attitudes was
investigated, and a significant GPA x task interaction was observed for internal motivation. The nature of the relationship was counterintuitive in that persons with low GPA scores reported higher levels of internal motivation working on the enriched task, and persons with high GPA scores were more internally motivated working on the unenriched task. When presented with the enriched task, the predicted internal motivation score varied from 5.31 to 4.67 over the GPA range of 2.25 (-1 SD) to 3.27 (+1 SD) which represents a fairly substantial difference given that the standard deviation of internal motivation in the enriched condition was 1.27. When presented with the unenriched task, the predicted internal motivation score varied from 4.40 to 5.08 over the GPA range of 2.25 to 3.27; the standard deviation of internal motivation in the unenriched task condition was 1.58.

While these results are countertheoretical, similar findings have been reported in the literature. The research which has investigated the moderating role of need for achievement (nAch) on task reactions is relevant here as it is reasonable to assume that GPA reflects nAch moderated by ability.

Need for achievement is one of several specific higher-order needs (e.g., need for self-actualization, autonomy, affiliation) which has been investigated as a potential moderator of task reactions. Ganster (1980) concluded that nAch is the only specific higher-order need for which there is replicated evidence (Stinson & Johnson, 1976; Stone et al., 1977; Steers & Spencer, 1977) for a significant moderating effect. However, Ganster (1980) noted that the nature of the effect of nAch on task reactions has been inconsistent and contradictory. For example,
Stone et al. (1977) performed a subgroup analysis on a sample of 340 manufacturing personnel and found a job scope-satisfaction correlation of .42 for the low nAch group and a task scope-satisfaction correlation of .13 for the high nAch group. Ganster (1980) also found unexpected results for the moderating role of nAch on task reactions. Ganster assigned 190 college students to either a simple or complex electronic assembly task and found that the most satisfied workers were those with low nAch scores working on high-scope tasks. Ganster (1980) cited a study by Peters and Champoux (1977) in which similar results were obtained with GNS, a general higher-order need, for a large field sample.

According to McClelland et al. (1953), the basis of nAch is the positive affect which accompanies effective performance. Persons high in nAch characteristically prefer tasks which depend on their own effort and ability as compared to teamwork. In fact, Noujaim (1968) has shown that executives high in nAch have fewer meetings and tend to want to work alone even when problems would be better solved by collaborative effort. Research has also shown that persons high in nAch prefer tasks that are moderately difficult rather than overly-challenging.

With an understanding of the nature of the nAch construct in mind, it is possible to speculate about the causes of this ostensibly counterintuitive finding in the present study. The enriched task in this study may have made it difficult for the high nAch person to become highly ego-involved. First of all, the task may have been perceived to be more than moderately difficult, and secondly, the enriched task required collaborative effort in that consensus among group members was
required. The high nAch person may have felt less personal responsibility for the task output in the enriched as compared to the unenriched condition; consequently, the linkage between effective performance and positive affect was weaker for the high nAch person in the enriched condition.

In contrast, low nAch persons may have been more internally motivated in the enriched task because of the teamwork required. The affiliative requirements of the task may have made it more meaningful, and the difficulty of the enriched task may have been less threatening to low nAch persons. (McClelland has shown that in the ring toss game, persons with little concern for achievement randomly decide where to stand in relation to the peg.)

A possible implication of this finding that GPA moderates the impact of task on internal motivation in a countertheoretical manner is that practitioners should not presume that the five core dimensions are all-inclusive with respect to the outcome variables of interest. The manipulation check confirmed that the enriched version of the task was truly enriched in accord with Hackman and Oldham's (1975) core dimensions yet the main effect of task on internal motivation was not significant. Further analysis, as indicated, revealed that the impact of the task on internal motivation was moderated by individual differences in GPA. Other task dimensions relevant to explaining variance in internal motivation in the present study may, for example, include "required interaction" and "responsibility" which are task attributes originally described by Turner and Lawrence (1965).
It is likely that the set of dimensions relevant to job enrichment will vary from one task/job to another. While the nearly-exclusive use of the five core dimensions has prevailed in job design research, authors are increasingly pointing to the fact that these dimensions are not exhaustive (e.g., Thomas & Griffin, 1983). A recent meta-analysis (Loher et al., 1985) presented strong support for the role of GNS as a moderator of job enrichment in accord with Hackman and Oldham's (1975) theoretical model. In the present study, it is impossible to pinpoint the cause(s) of the counterintuitive relationship observed between GPA and task. It may be that the increased levels of the five core dimensions, or increased complexity of the task, was de-motivating to high-GPA persons. On the other hand, this relationship may have resulted from differences in the two tasks along task dimensions not represented by the five core dimensions. The counterintuitive relationships found in the job design literature, with respect to moderating personality variables, may in some instances be attributable to a failure to measure the relevant task attributes.

An alternative explanation for the observed interactions between ACT/GPA and social cues and GPA and task is mentioned below because it is consistent with the data. It could be argued that the findings are attributable to the fact that higher ability subjects were more resistant to the task and social cues manipulations than were lower ability subjects. If this competing hypothesis were correct, it would be expected that higher ability subjects would be equivalently resistant to the manipulations across the dependent variables; however, the ACT/GPA x social cues interactions were observed only for MFS and the GPA
x task interaction was observed only for internal motivation. A second argument against this alternative hypothesis is the fact that no subject suspected the actual hypotheses under investigation. Prior to debriefing, subjects were asked about their thoughts on the purpose of the study. The great majority assumed the purpose was exactly what the experimenter had described. None suspected that the confederates were actually working for the experimenter. Therefore, the preceding interpretations of the auxiliary findings are certainly preferred although this alternative hypothesis is plausible.

Directions for Future Research

A substantial amount of literature indicates that personality factors can affect an individual's susceptibility to social influence (e.g., need for approval, authoritarianism, locus of control, introversion-extraversion). The theoretical specification of the SIPA will certainly require a determination of the relevant individual difference variables. The personality variables which have been examined within the context of SIP research are, at present, limited.

In addition to FDI and mental ability, only self-esteem (Weiss & Shaw, 1979) and intrinsic work orientation (O'Connor & Barrett, 1980) have been studied. Significant interactive effects have been observed only for FDI and mental ability. While the situational parameters require delineation, mental ability and FDI merit further investigation in this author's opinion.

With regard to FDI, a particularly interesting issue to pursue would involve examining the potentially moderating effect of FDI on task perceptions and attitudes as subjects gain experience with the task.
Vance and Biddle (1985) found that social information had less impact on task perceptions and attitudes as subjects gained task experience. It would be worthwhile to determine whether differences between FD and FI persons would emerge over time as the opportunity for the development of an objective referent increased, i.e., would FI persons rely significantly less on social information over time as compared to FD persons? Also, providing subjects with two tasks varying in enrichment, in a within-subjects design, would ensure access to an objective referent. It could then be determined whether FD versus FI persons would manifest differences in the degree of reliance on social information versus the objective referent in the formation of task perceptions and attitudes.

**Concluding Remarks**

Assumptions made about how task perceptions and attitudes are formed are critical to determining strategies for enhancement. The present study confirms the importance of the social context to the development of task perceptions and attitudes. While this was a study of job design, in contrast to job redesign, a possible implication of the present research is that tremendous costs could be incurred in producing objective job changes resulting in changes in perceptions of job characteristics, without a realization of the anticipated affective response changes. While the objective task characteristics influenced task perceptions in this study, social information had a far greater impact on affective reactions to the task.

For the full practical impact of SIP theory to be realized, researchers must isolate the types of individuals (and work settings)
for whom social factors are the central determinants of job design success or failure. In situations so identified, it would be imperative that the practitioner have a firm grasp of the ongoing social dynamics (e.g., communication patterns, cohesiveness, role structures, performance norms) and how these might impinge on any objective job changes. Further research in this area is encouraged.
APPENDICES
APPENDIX A

FIELD DEPENDENCE — INDEPENDENCE (FDI):
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FIELD DEPENDENCE - INDEPENDENCE:
A REVIEW OF THE LITERATURE

In this review, the conceptual history and evolution of the FDI construct are described. The literature on the relationship between FDI and interpersonal behavior, which is directly relevant to the present study, is then presented. Following this review is a brief discussion of the nature of the FDI construct, its measurement, and the manner in which differentiation theory provides a framework for interpreting the cluster of characteristics associated with FD and FI cognitive styles. The review concludes with a discussion of the adaptive qualities of each pole of the FDI continuum under specified circumstances.

The Conceptual Ancestry of the FDI Construct

The New Look movement initiated in 1949 included a loose confederation of psychologists critical of the dominant approaches to perception and personality then in vogue. Their shared discontent concerned the fact that research in perception was neglecting the personality structure of the perceiver, and perceptual processes were being ignored in personality theory. In conceptualizing person-personality relationships, the New Look movement called for the assignment of a pivotal role to a central, adapting and regulating personality structure which enters into all functioning including perception (Klein & Schlesinger, 1949). Emerging from the research spawned by the New Look approach to perception-personality relationships were individual difference variables labelled cognitive styles.

Cognitive styles are defined as the characteristic ways in which individuals conceptually organize their environments (Goldstein &
Four characteristics distinguish cognitive styles. First, cognitive styles refer to the form rather than the content of cognitive activity, manifested by differences in how individuals perceive, think, learn, solve problems, relate to others, etc. Second, cognitive styles are pervasive dimensions cutting across the boundaries traditionally used in compartmentalizing the human psyche. A third characteristic of cognitive styles is that they are stable over time. Fourth, cognitive styles are bipolar, with each end having different implications for cognitive functioning. Unlike ability dimensions, each pole has adaptive qualities under specified circumstances (Witkin, Moore, Goodenough, & Cox, 1978).

The Evolution of the Construct

FDI was among the cognitive styles identified and investigated during the New Look days. Research on FDI originated in laboratory studies designed to assess how people perceive the upright as quickly and accurately as they typically do (Asch & Witkin, 1948a, 1948b; Witkin, 1948, 1949, 1950, 1952; Witkin & Asch, 1948a, 1948b). These studies sought to determine the kinds of cues persons use in spatial orientation, principally the relative importance of cues provided by the visual environment and cues provided by the body of the perceiver. The direction of the perceived upright is ordinarily determined by the visual framework and gravitational pull operating in tandem. The research strategy adopted to understand the basis of perception of the upright was to separate these two standards experimentally.

Three spatial orientation tasks were developed which make visual and gravitational cues incongruent. These include the Rod and Frame
Test (RFT), the Body Adjustment Test (BAT) and the Rotating Room Test (RRT). In the RFT, the subject is seated in a totally darkened room and views a tilted luminous square frame, within which is a luminous rod, which can be tilted separately from the frame. The subject's task is to adjust the rod to the upright position while the frame remains in its initial position of tilt.

The BAT compares use of external and body referents in evaluation of the spatial position of the perceiver's own body. Seated in a specially constructed chair which can be tilted left or right, the subject is asked to judge his or her own position while chair and room are tilted and to direct the adjustment of the chair to the vertical while the room remains in its tilted position. Both the RFT and BAT involve tilting the visual framework and leaving the gravitational pull on the body unaltered.

In the RRT, the separation is accomplished in the opposite manner by altering the direction of the force on the body while the visual framework remains upright. This situation is achieved by placing the tilting room apparatus on a trolley track and moving it in a circular path while the subject adjusts his or her tilted chair to the upright. The direction of the effective force on the body is the result of the outwardly-acting centrifugal pull and the downward pull of gravity. In all three tasks, reliance on the external visual framework results in a different location of the upright than use of the posturally experienced gravitational upright.

Two findings, peripheral to the original research impetus, changed the direction of this work from an attempt to understand the effects of
stimulus characteristics on spatial perception to an attempt to understand the characteristics of individuals that contribute to their perception of the upright. It was discovered, quite unexpectedly, that individuals differ markedly in the degree to which they use body versus external information in their perceptual judgments; furthermore, they tend to be highly self-consistent in performance across the three spatial tasks. This suggested that people have characteristic modes of processing information when integrating sources of information available to them for locating the upright.

This new research direction led to intensive studies of perceptual, intellectual and personality characteristics as they relate to spatial orientation (Witkin, Lewis, Hertzman, Machover, Meissner, & Wapner, 1954/1972; Witkin, Dyk, Faterson, Goodenough, & Karp, 1962/1974). While the three orientation tasks presumably assessed reliance on field or body, they could also be conceived to involve separation of an item (body or rod) from an organized field (room or frame). A search was made for other situations, which do not assess perception of the upright, that would reveal the manner in which people perceive an item within a larger field.

The characteristics of the Embedded Figures Test (EFT) met these criteria. In the EFT, a subject is shown a simple figure and required to find it in a complex design. To identify the simple figure, it is necessary to break up the organized pattern so as to expose the figure. Subjects who had difficulty locating the simple figure were the ones who had relied on the external visual framework in perception of the upright. As was the case with the tasks measuring perception of the
upright, performance on the EFT suggested that the perceptual process represented by the task could not be fully understood in terms of the structure of the field alone. The finding that people are highly self-consistent in their level of adherence to the presented field pointed to the importance of personal factors responsible for individual differences in performance.

The significant and substantial correlations between the EFT and the spatial orientation tests contributed to the view that all four tests are measuring the degree to which the surrounding organized field influences the person's perception of an item within it. This led to the adoption of the term field dependence - independence in describing the perceptual dimension under study.

Further studies (Witkin et al., 1954/1972; Witkin et al., 1962/1974) linked FDI to the ability to overcome embedding contexts in problem-solving and to structuring ability in perceptual and intellectual functioning, thereby broadening the picture of self-consistency across psychic domains. Subjects identified as FD in spatial orientation tasks were found to have greater difficulty solving that particular class of problems in which the solution depends on taking a critical element out of its context and restructuring the problem material so that the element is used in a different context (Witkin et al., 1962/1974).

Research on the relation between disembedding and structuring was stimulated by the view that underlying both is a tendency to deal with the field in a more active or more passive manner. It was hypothesized that the tendency to leave the stimulus material as is or to act upon it (break up the organized pattern so as to identify the embedded figure)
would show itself in congruent fashion when people have to deal with a field that lacks clear inherent structure. Acting on the field or restructuring may take the form of breaking up the field so the parts are discrete from the background, providing organization to a field that lacks it or imposing a different organization on a field from the one suggested by its inherent structure. The expectation that relatively FI people would impose structure on an unstructured field, whereas relatively FD people would not, was supported in many studies using both perceptual and problem-solving tasks (Witkin et al., 1962/1974).

The evidence linking structuring tendencies to analytical tendencies suggested that the observed individual differences may best be conceptualized as an articulated-global continuum. The individual who experiences in an articulated fashion tends to perceive items as discrete from the background when the field is organized and to impose structure on a field, perceiving it as organized, when the field has relatively little inherent structure. In contrast, experience is more global when it accords with the overall character of the prevailing field as given and involves less intervention (i.e., analysis and structuring).

Further research (Witkin et al., 1962/1974; Witkin et al., 1954/1972) linked the individual differences described so far to other areas of psychological functioning including personality (i.e., individual differences in body concept, in nature of the self and in controls and defenses typically used). Persons identified as FI, in contrast to FD persons, were found to have an articulated self-concept, experiencing the body as having definite limits or boundaries and the parts within
as discrete yet interrelated. FI individuals display a more developed sense of separate identity; they have an awareness of needs, feelings and attributes which they recognize as their own and as distinct from those of others. For FI persons, internal frames of reference serve as guides for self-definition. The less developed sense of separate identity of FD persons manifests itself in reliance on external sources for definition of their attitudes, judgments and views of themselves. In addition, it was discovered that FI persons tend to make use of specialized defenses, such as isolation and intellectualization. FD persons, in contrast, are inclined to use more global or diffuse defenses such as repression and primitive denial.

**FDI and Interpersonal Behavior**

Subsequent research, conducted by Witkin and colleagues between 1954 and 1962, showed that the individual modes of functioning identified as cutting across the domains of perception, cognition and personality extend into the interpersonal domain as well. There is substantial evidence demonstrating that the tendencies to rely primarily on internal or external referents that persons show in perception of the upright have a direct counterpart in their behavior in the interpersonal domain. This pattern of results found with tests of perception of the upright has been equally well supported in studies using the EFT. Indicated by performance on the RFT and EFT, respectively, this pattern suggests that people who maintain autonomy of the external visual field are likely to function more autonomously of the external social frame of reference, and those who are competent at restructuring are less likely to need recourse to external sources of information in making
judgments (Witkin & Goodenough, 1981). Task ambiguity, however, appears to moderate the relationship between FDI and use of external referents. Studies using unambiguous tasks have less consistently found a relationship between FD and reliance on an external social frame of reference, as is later described.

Extensive reviews of the studies investigating the relationships between FDI and social behavior have been conducted independently by Karp (1977) and Witkin and Goodenough (1977). Only those studies which have direct implications for social information processing will be cited in the presentation which follows. This presentation is organized by four categories: (a) response to unsolicited suggestion or group pressure; (b) the effects of ambiguity in moderating the relationship between FDI and use of external referents; (c) seeking information from others; and (d) sensitivity to social stimuli.

Response to unsolicited suggestion or group pressure. The earliest research on the use of social referents by FD and FI persons was conducted by Linton (1952, 1955). In an autokinetic situation, subject FD was significantly related to confederates' effects on their judgments. Using a variety of similar situations involving announced judgments by confederates, many studies have extended Linton's work (e.g., Balance, 1967; Birmingham, 1975; Busch & DeRidder, 1973; Paeth, 1973; Weinberg, 1970). The results of these studies suggest that FD subjects, in a group setting, are particularly inclined to make use of social referents in making judgments about ambiguous stimuli.

Numerous studies have investigated the degree of influence which persuasive written communication has on attitude change for FD vs. FI
persons. The findings have been mixed, but most of these studies have not found FD people to be more influenced by arguments attributed to an authoritative source (e.g., Brilhart, 1966; Colker, 1972; Doktor & Hamilton, 1973; Gary, 1967; Goebel, 1966). Also, research indicates that announcing bogus group averages does not consistently have a greater effect on FD than on FI subjects (e.g., Dawson, Young, & Choi, 1974; Rubin, 1969). In addition, questionnaire scales of acquiescence or conformity evidence no significant relation to FD (e.g., Balance, 1967; Bieri, 1960; Goldstein, Neuringer, Reiff, & Shelly, 1968).

Based on the preceding literature, Witkin and Goodenough (1977) concluded that a consistent relationship between FD and susceptibility to external influence is found only under conditions in which subjects interact with actual (or bogus) members of a group making judgments under conditions of ambiguity.

The moderating effect of situational ambiguity. Evidence from a number of sources suggests that FDI is unrelated to social influence effects in unambiguous situations. For example, studies of volunteering behavior (e.g., Soat, 1974; Webb, 1972); the tendency toward cooperativeness (e.g., Swan, 1973; Tobias, 1968); hypnotizability (e.g., Field, 1973; Miller, 1973; Morgan, 1972; Palmer & Field, 1971); and placebo responsiveness (e.g., Brandsma, 1971; Halm, 1967) reveal no difference between FD and FI persons in responsiveness to social influence attempts. Witkin and Goodenough (1977) concluded that FD people are no more likely to be influenced by others than FI persons in situations in which no information is required from others for making judgments or for self-definition.
In addition to being limited primarily to ambiguous situations, the information-seeking behavior of FD people may occur only when the people available to them are perceived as likely sources for resolving the ambiguity. This is indicated by a study in which the subject's confidence in his or her own judgment, relative to the judgment of another person, was experimentally manipulated (Mausner & Graham, 1970). Subjects were asked to make judgments about the rate of flicker of flashing lights, after hearing the judgment of a partner, under two conditions, one in which the subject was led to believe that his judgments were quite accurate and his partner's inaccurate and another in which the reverse beliefs were fostered. The partner had little influence on the judgments of FI subjects under either condition. In contrast, FD persons shifted their judgments toward those of the partner to a greater extent when they believed the partner was a more accurate judge. This study suggests that FI persons, by operating with such separateness from the social context, may be impervious to information from others that could be helpful to them.

To the extent that ambiguity plays an important moderating role in the relationship between FD and reliance on external referents, variations in the degree of social structure would be expected to have a greater impact on FD than FI persons. Ambiguity in role definition was first investigated in a study of the effect of different instructions on subjects entering a sensory deprivation experiment (Culver, Cohen, Silverman, & Shmavonian, 1964). Some subjects were provided specific directions about what to expect during deprivation and were given feedback throughout, whereas other subjects were given ambiguous
instructions and no feedback. FD subjects, as compared to FI subjects, reacted to the uninformed condition with significantly greater discomfort as measured by physiological correlates of stress.

Since the Culver et al. study, other approaches have been used to investigate the effects of role ambiguity on FD and FI persons. One approach has emerged from research on verbal conditioning in conversation. Gates (1971) asked subjects to talk about a topic of interest to them under a condition in which the interviewer provided appropriate feedback (e.g., "umm hmm" or "yeah"). FI subjects' word output was unaffected by interviewer responsiveness whereas FD subjects' output was significantly lower with the silent interviewer. In addition, post-interview attitude measures clearly showed that FD subjects were particularly affected by the lack of guidance and structure from the interviewer. FD subjects more often agreed with statements such as, "I think I might have done better during the interview if the interviewer had told me at times just how I was doing," whereas FI subjects typically agreed "It really didn't make much difference one way or the other that the interviewer didn't tell me how I was doing during the interview."

de Groot (1968) employed the five-minute monologue association period used by Gottschalk and Gleser (1969), which is similar to Gate's silent-interviewer technique, and found verbal productivity in five-minute monologue samples to be lower among FD subjects in the non-responsive interviewer condition. This finding was replicated by Steingart, Freedman, Grand, and Buchwald (1975). In another study, which looked at kinetic behavior, it was found that FD subjects showed
more continuous hand-to-hand movement (i.e., hand-wringing) during Gottschalk-Gleser monologues than did FI subjects, but there was no difference between FD and FI subjects in dialogues.

Collectively, these studies indicate that FD persons, as compared to FI persons, are uncomfortable with ambiguity which presumably results from a lesser capacity to provide their own structure to situations that lack it. As a consequence, they tend to rely on external referents, whom they regard as sources of information, to help remove the ambiguity. In contrast, FI persons display greater autonomy from others under ambiguous conditions presumably through recourse to structuring mechanisms of their own. According to Witkin et al. (1977), FI persons are more likely to be aware of needs, feelings and attributes which they experience as their own and as distinct from those of others; these provide an internal frame of reference to which the FI person may adhere in dealing with external social referents.

**Seeking information from others.** A few studies have examined the information-seeking activities of FI vs. FD subjects when placed in ambiguous situations in which an authority figure is present. Witkin et al. (1962/1974) recorded comments of ten-year-old boys given the TAT. FD boys, significantly more than FI boys, asked questions of the experimenter to elicit further definition and specification of the task (e.g., "Should the story have a happy ending?").

When subjects were given four difficult tasks with instructions to ask the experimenters for help when needed, Johnson (1974) found that FD subjects asked for help significantly more often than FI subjects.
Studies of selection of FD and FI patients for different kinds of therapies can be extrapolated to this issue of information-seeking. Greene (1972) found that therapists chose supportive therapy for FD clients and modifying therapy (in which the patient's role is less highly structured) for FI clients. Karp, Kissin, and Hustmyer, Jr. (1970) found that alcoholic patients selected for insight therapy were significantly more FI than patients selected for more structured approaches. Witkin, Lewis, and Weil (1968) found that therapists responded with more active direction to FD than FI patients.

Koff (1972) provided support that this differential response by therapists is, in fact, paralleled by different needs of patients. Prior to entering psychotherapy, new patients of a free mental health clinic were questioned as to their expectations about the role of the therapist who would be assigned to them. FD patients expected advice and guidance from their therapists to a significantly greater extent than did FI patients.

Together these studies suggest that FD persons actively seek information, guidance or structure from authority figures to a greater extent than do FI persons when the situation is ambiguous.

The fact that FD persons are more likely to rely on social information raised the issue of whether they are dependent in other ways as well. Witkin and Goodenough (1977) reviewed those studies (e.g., Coates, Lord, & Jakabovics, 1975; Crandall & Sinkeldem, 1964; Jakabovics, 1974; Pedersen & Wender, 1968) which have examined the relationship between FD and emotional dependence. These reviewers concluded that while FD persons show significantly less "autonomous
achievement striving" (i.e., ability to think for self, self-reliance, initiative), they are not generally more emotionally dependent (e.g., seeking attention and recognition).

Sensitivity to social stimuli. Given the reliance on external referents displayed by FD persons, it is reasonable to expect them to engage in behavior that is instrumental in making external referents accessible to them when needed. Such behavior is likely to have as its particular focus the most salient source of these referents: other people. Substantial support for this expectation has been provided in studies that have assessed looking behavior during social interaction, extent of memory for previously encountered faces and recall of social material in an incidental-learning paradigm.

The face provides the main source of cues about what another person is thinking and feeling. Several studies have shown that FD subjects look at the experimenter significantly more than FI subjects in problem-solving. In contrast, FD and FI subjects show no difference in looking behavior when the experimenter's role does not make him a source of cues (e.g., Johnson, 1974; Ruble & Nakamura, 1972). Konstadt and Forman (1965) had subjects perform a task under approval and disapproval conditions. In the approval condition, the experimenter's behavior was calculated to make subjects feel their own resources were proving adequate. No difference in looking behavior was observed. In contrast, FD subjects looked at the experimenter significantly more often than FI subjects in the disapproval condition in which the subjects were made to feel they were not doing well.

Several studies (e.g., Crutchfield, 1958; Messick & Damarin, 1964)
have considered extent of memory for previously encountered faces as an indirect indicator of attention to faces, and have shown that FD subjects are superior in recognition. For example, Crutchfield demonstrated that FD people did significantly better than FI persons in identifying, from a group of photos of both familiar and unfamiliar faces, those with whom they had spent the weekend. However, when surrogate representations of people (such as pictures) have been used, the results are variable. Witkin and Goodenough (1977) concluded that substantial evidence exists which indicates that "differences in social behavior between FD and FI people are most likely to emerge when opportunities for direct experience of another are provided" (p. 673).

Using some variant of an incidental learning paradigm, with the incidental material consisting of a series of neutral and social words, a number of studies (e.g., Eagle, Goldberger, & Brietman, 1969; Fitzgibbons & Goldberger, 1971; Fitzgibbons, Goldberger, & Eagle, 1965) have shown that FD subjects exhibit better recall of social words. Fitzgibbons et al. (1965) suggested that the FDI dimension could best be understood as reflecting a social orientation vs. a task orientation; within a given experimental situation, FD subjects are more likely to be interested in and distracted by the many social cues present whereas FI subjects are more likely to attend solely to task-relevant cues.

Birnbaum (1975), also using an incidental learning paradigm, asked subjects to recall anything they had seen, heard, felt or noticed during an immediately preceding experimental session. FD subjects recalled significantly more social aspects (defined as reflecting attention to another person in the experimental session) whereas FI subjects recalled
more task-related aspects (defined as reflecting attention to elements of the experimental task).

These studies of FDI in relation to social sensitivity indicate that FD persons are alert to social cues or selectively attentive to such information. Pemberton (1952) found that FI persons were not sensitive to social undercurrents as reflected in a personality inventory she developed. This attentiveness to social information displayed by the FD person would have adaptive value in that it would be helpful in making external referents accessible when needed.

**Theory Development**

In the course of research on FDI, both spatial orientation tests (e.g., RFT) and cognitive restructuring tests (e.g., EFT) have been used to measure the construct. Originally, Witkin and Goodenough explained subjects' performance on the spatial orientation tests as a reflection of their predominant reliance on cues provided by the body vs. the external field. As previously mentioned, the three orientation tests could also be conceived to involve separation of an item (body or rod) from an organized field (room or frame). The significant and substantial correlations between the EFT and the spatial orientation tests contributed to the view that all four tests may be measuring the degree to which the surrounding field influences the person's perception of an item within it. According to this later view, FDI, as measured by the spatial orientation tests and EFT-type tests, was considered a unitary construct reflecting competence in disembedding.

More recent experimental studies on the role of specific bodily events in the perception of the upright have suggested that performance
on the spatial orientation tests is, in fact, a function of the relative weights assigned to vestibular and visual information. (For a review of this literature, see Witkin and Goodenough, 1981). Based on this newer evidence, Witkin and Goodenough (1981) put in question their subsequently held view that competence in disembedding is the essence of performance in both spatial orientation and EFT-type tests. They reverted to their earliest view of performance on tests of perception of the upright. The authors (1981) hypothesized that the processes involved in perception of the upright were distinct from, though related to, the processes involved in performance on the cognitive restructuring tests.

Witkin and Goodenough (1981) found only two factor-analytic studies which used more than one measure of perception of the upright and cognitive restructuring. In both studies, a single factor emerged. However, neither study included enough reference tests to allow for the potential emergence of two distinct factors. The authors concluded that it was not clear, in the present state of evidence, whether there exists a distinct factor involving reliance on vestibular vs. visual sources of information. Further research was called for. In 1981, Linn and Kyllonen investigated the issue using 12 measures of FDI. Analysis of the data using multidimensional scaling, cluster analysis and factor analysis supported Witkin and Goodenough's hypothesis (1981) that FDI, as commonly referred to, actually consists of two separate constructs, one related to cognitive restructuring and the other related to perception of the upright.

Existing evidence therefore supports the view that FDI consists of two separate constructs. Nevertheless, there are significant and
substantial correlations between the cognitive restructuring and spatial orientation tests. Arbuthnot (1972) reported an average correlation of \(.54\) between the EFT and the RFT across 30 studies. Witkin and Goodenough (1981) concluded that the evidence is consistent that FD in perception of the upright is related to cognitive restructuring. Differentiation theory, in which FDI is embedded, provides a useful framework for interpreting the observed relationship between these variables.

**Differentiation theory.** Witkin and Goodenough (1981) concluded that the contrasting constellations of characteristics associated with FD and FI persons are diverse manifestations of more developed or less developed psychological differentiation. "Differentiation" serves as a useful construct for conceptualizing the enlarged picture of self-consistency found across psychological domains (i.e., perceptual, intellectual, personality and interpersonal domains). Differentiation is a structural property of an organismic system. Differentiation implies segregation of self from nonself, segregation of psychological activities from each other and specificity of functioning within each activity. (For a presentation and extension of the theory of psychological differentiation, see Witkin et al., 1962/1974, and Witkin, Goodenough, & Oltman, 1979, respectively.)

According to the model proposed by Witkin and Goodenough (1981), autonomy or degree of self-nonself segregation is at the apex of the cluster of related variables, as a broad superordinate construct. Cognitive restructuring skills and interpersonal competencies are subsidiary constructs at a level below the apex. Specific cognitive restructuring and interpersonal competence variables are at the next
lowest level. Greater self-nonself segregation or autonomy leads to increased reliance on bodily cues in perception of the upright and to a predisposition to act on the field in tests of cognitive restructuring.

Increased individual autonomy would therefore be associated with competence in restructuring while increased reliance on external referents would be associated with a repertoire of interpersonal competencies. According to the theory, a person's tendency to rely primarily on external referents or be self-reliant would affect his or her style of processing information from the field, influencing whether he or she will restructure the field or accede to its dominant properties. The more autonomous the person, the more likely it is that he or she will go beyond the information given, to change or act on the field. FI persons, with their greater self-nonself segregation, are capable of structuring situations on their own. FI persons do not have the need for external referents displayed by FD persons and, consequently, are less likely to develop the social characteristics exhibited by FD persons. These interpersonal competencies ultimately serve to ensure access to external referents when needed.

Evidence has accumulated which supports autonomy or self-nonself segregation as the higher-order construct responsible for the development of the cluster of characteristics shown to span psychological domains. Factors likely to affect development of self-nonself segregation such as child-rearing practices, cultural influences and ecocultural characteristics have been related to FD in perception of the upright, cognitive restructuring and self-reliance. A brief description of the
findings is presented below.

Child rearing practices which encourage separate autonomous functioning have been shown to foster self-nonself differentiation and, more particularly, a FI cognitive style. A large body of cross-cultural literature shows a striking relationship between a society's emphasis on conformity vs. autonomy and the FDI of its members. Members of societies that stress conformity are more FD in perception of the upright, perform less well on restructuring tests and exhibit lesser self-nonself segregation (as indicated by figure drawings) than do members of societies whose socialization practices encourage autonomous functioning.

Comparisons of mobile hunting and sedentary agricultural groups have revealed a relationship between cultural demands and FDI. Hunting societies characteristically have little permanent, centralized, political or religious authority beyond the family band and place emphasis on autonomy and self-reliance. Farming societies, in contrast, typically exhibit a diversity of social roles, marked stratification and an emphasis on compliance with social, political and religious authority. The results of many studies with groups from different parts of the world indicate that members of mobile hunting societies tend to be more FI in perception of the upright and in restructuring skills than do members of sedentary agricultural societies. These differences are especially pronounced between women in the two settings. In the mobile hunting society, the contribution women make to the economy is highly valued, and obedience in women is not emphasized. In contrast, in agricultural societies, sex roles are sharply distinguished and there is
particular emphasis on obedience in female socialization. In the hunting society, self-reliance and autonomy are often required and the FI cognitive style is adaptive to the environmental requirements. The hunter must be able to extract critical information from the surrounding field and must be continuously aware of his location in space; minimal interpersonal competencies may be required by this relatively isolated lifestyle. In contrast, the sedentary lifestyle of farming societies places less demand on autonomy and restructuring skills, and the development of interpersonal competencies may be particularly adaptive. (For an extensive review of this cross-cultural literature, see Berry, 1976; Witkin & Berry, 1975; Witkin & Goodenough, 1981.)

The Bipolar Nature of FDI

In conclusion, it should be reemphasized that each pole of the FDI continuum has adaptive characteristics under specified circumstances. Persons who are FD on tests of perception of the upright and who do less well on the EFT display an interpersonal orientation. This interpersonal orientation includes an attentiveness to the views of others, a sensitivity to social cues, a strong interest in people, a preference for being with others, emotional openness and facility in getting along with others. These characteristics add up to a set of social attributes and skills that are less evident in FI persons. FI persons tend to be self-reliant and to display a more impersonal orientation.

The combination of competence in cognitive articulation and an impersonal orientation at one pole and the combination of a social orientation and social skills and less competence in articulation are obviously adaptive in different settings. This is particularly evident
in educational-vocational domains where FI vs. FD persons prefer and are better suited for different occupations. There is a growing body of literature on the role of FDI in career differentiation. (For a review, see Witkin et al., 1977.) Similarly, the appropriateness of the cluster of characteristics associated with the FD and FI styles would vary with cultural requirements. In summarizing the bipolarity of the construct, Witkin et al. (1971) caution that it is essential to specify good or bad "for what" in making a value judgment about the FD and FI cognitive styles.
APPENDIX B

GRAPHICAL REPRESENTATION OF PREDICTED RELATIONSHIPS
HYPOTHESES

**Hypothesis 1**

negative social cues  positive social cues

**Hypothesis 2**

unenriched task  enriched task

**Hypothesis 3**

negative social cues  positive social cues

FD  FI

**Hypothesis 4**

unenriched task  enriched task

FD  FI

*Note:* Ordinate: Task perceptions and attitudes.
APPENDIX C

1. ORGANIZATION CHART
2. IN-BASKET ITEMS
Practice Memo

TO Ms. Arps

DATE 12/19/84 TIME 10:00 a.m.

WHILE YOU WERE OUT

Mr. Ted Racine

of

Phone _______ 589-4131
Area Code Number Extention

TELEPHONED PLEASE CALL
CALLED TO SEE YOU WILL CALL AGAIN
WANTS TO SEE YOU URGENT
RETURNED YOUR CALL

Message Wants to know
if he was accepted for
the sales position.

Annette
Secretary
Memo 1

Andrea,

I need your advice — Neil, who has been the top salesperson for the past two years has done miserably for the past 6 weeks. Not only has his performance dropped but his attitude is very poor. Has missed sales meetings with flimsy excuses.

This is bad for morale in general as Neil has always been sort of a role model.

He's been totally unresponsive (bordering on hostile) to my attempts to get to the bottom of things. Any ideas??

Neil
Assistant Sales Manager
To: Andrea Arps  
From: Howard Hitchcock  
Subject: OSU Account  

Andrea,

It has come to my attention that Kessler and Sons has made a major pitch at OSU to sell their intro book - wining & dining, etc.

We're losing ground & I want that account! Do something!

General Sales Manager
Memo 3

Dec. 11, 1984

Ms. Andrea Arps
Psychologists Press, Inc.
Columbus, OH 43212

Dear Ms. Arps:

Tom Handel said he spoke to you about my interest in working for Psychologists Press, Inc. I've attached a resumé and would very much appreciate the opportunity to talk with you. I am looking forward to hearing from you.

Sincerely,

[Signature]
Memo 3 Attachment

LARRY S. CARSON
LIEUTENANT JUNIOR GRADE
SUPPLY CORPS
UNITED STATES NAVAL RESERVE
Office: USS CARL VINSON CVN-70
FPO NEW YORK 09558
Home: 171 Rocklee Drive
Gahanna, Ohio 43230
614 475-8080

JOB OBJECTIVE
Management

PRESENT STATUS
Supply Officer, USS CARL VINSON (aircraft carrier)

EXPERIENCE
In current position have gained experience in managing the retail stores, laundry/dry cleaning plant, tailor shop, and barber shops on the world's largest mobile vessel. Held personally accountable for retail stock and funds. Directly supervise 110 employees.

As Disbursing Officer on USS CARL VINSON from November 1981 to October 1982 gained experience in disbursement, collection, and accounting for funds. As the accountable officer, carried $350,000 in my safes for daily business; cash carried while at sea $4.2 million. Held personally accountable for all funds. Directly supervised 14 employees.

As Retail Clerk for Kroger from November 1975 to February 1982 gained experience in grocery, dairy, and produce departments, and as cashier.

EDUCATION
Formal
The Ohio State University, Columbus, Ohio
Degree: B.S. in Business - 1980
Dual major: Business Finance
Real Estate and Urban Land Economics

Service
Basic Supply Officer Qualification Course

PERSONAL
Born: 8/11/58 in Quincy, Mass. Height 5'11", weight 155#. Health: Excellent
Hobbies: Softball, golf, all sports, family activities
Andrea,

I'd like you to attend the sales meeting on Friday at 2:00. Let me know if this will be possible. There are a number of important issues to be raised.

Larry

Assistant Sales Manager
To: Andrea Arps
From: Sam Henderson, Maintenance
Subject: Building Heat

Andrea,

The heater in the building will be turned off next Thursday afternoon.
Andrea,

For the past couple of weeks, a number of things have been missing from the sales office (from items in the frig to money from a wallet). I think I know who the thief is. See me.

Steve Stillman
Sales Representative
To: Howard Hitchcock  
From: Donald Dreese  
Subject: Region Standings

Howard,

The report is in and our region has come in last for the second consecutive period. What's the problem?

Regional Manager

We need to meet to discuss some promotional ideas — maybe a sales contest.

Howard
Andrea,

I hate to go over Murray's head, but I feel I have to. Peter and I had a dispute over who deserved the commission for a particular sale. (I'll explain the details when I talk to you). Anyway, Mel decided in favor of Peter. I feel that the decision was completely unfair - the result of favoritism.

John

Sales Representative
Dec. 12, 1984

Ms. Andrea Arps
Psychologists Press, Inc.
Columbus, OH 43212

Dear Ms. Arps:

This is in response to your request for an employment reference for Mr. Nario Vella whom you said was employed with our firm 9/82 - 10/83. I have thoroughly checked our personnel files and have found no indication of Mr. Vella ever having been employed by Superior Products.

Sincerely,

Eleanor Dulaney
Personnel Manager

ED/mps
Dec. 11, 1984
505 W. Locsey
Columbus, OH 43202

Ms. Andrea Arps
Psychologists Press, Inc.
Columbus, OH 43212

Dear Ms. Arps:

On November 8, I applied for a job in your company as a clerical assistant. Just yesterday I got a letter telling me I was "unacceptable" with 15 years experience in clerical work. I heard through the grapevine that your company does not like to hire blacks. This is the only plausible reason for having been rejected.

You hear me now - Unless I'm hired, I'm taking this to the EEOC. You can't keep getting away with such discrimination.

Sincerely,

[Signature]

[Handwritten Signature]
Memo 11

Dec. 10, 1984

Ms. Andrea Arps  
Psychologists Press, Inc.  
Columbus, OH 43212

Dear Andrea,

Eleanor Cytes has applied for a position as salesperson in our firm. She indicated that she was in your employ 9/80 – 8/82. Any information you could provide us concerning her work and character would be most helpful.

Sincerely,

[Signature]

Richard N. Kessler

RMK/we
To: Howard Hitchcock  
   Andrea Arps

From: Donald Dreese

Subject: Applicant Rejection Letter

I am considering alternatives to our current applicant rejection letter. Please draft your ideas and have each of your staff members do the same. A meeting will be held to discuss this later in the month.

Regional Manager
Mr. Ned Neil  
Psychologists Press, Inc.  
Columbus, OH 43212

Dear Mr. Neil:  

This is to inform you that our committee has decided to purchase your text, Introduction to Psychological Principles. We would also like to compliment the sales approach that you used. As compared to so many of the "tactics" that were used by the other publishers, your approach was quite refreshing.

Please let us know when you can meet with us.

Sincerely,  

Jeff Carper, Ph.D.  
Psychology 100 Coordinator  
Denson College
Memo 14

Psychologists Press, Inc.
Internal Memo

12/12/84

To: Howard Witchcock
Andrea Arps

From: Donald Dreese

Subject: Sales Training

The Board has decided that we need to upgrade our current sales training program. External consultants have been hired to facilitate the process. Top management is expected to take an active role in the redevelopment of the program. Training specialists from Haze Associates want to meet with the three of us sometime next week. Please outline your thoughts on the current program and suggestions for improvement.

Let me know when you'll be available for the meeting.

Regional Manager
Andrea,

There's been a rumor in the sales office that commissions are going to be cut. Take care of this.

Howard

General Sales Manager
Ms. Arps --

I can no longer deal with Steve. He is more demanding than the rest of the staff put together. And nothing is ever good enough for him. Sometimes I think he has me retype material just so he can continually have someone under his thumb. And it's not only the number of demands he places on me, it's his attitude as well. He belittles me in front of other people.

You know I love this job and have always done well, but no job is worth putting up with this. Unless something is done immediately, I'm going to submit my two-week notice.

Molly McCracken
Secretary
APPENDIX D

SUPERVISOR'S OPENING REMARKS:

a. Enriched Task Condition

b. Unenriched Task Condition
SUPERVISOR'S OPENING REMARKS

My name is Paula Hogan. I'm a graduate student in Industrial Psychology. The experiment you're here for today is a study about the way people make decisions in groups. You'll be taking part in a group decision making exercise called an In-Basket. An In-Basket contains items (e.g., letters, phone messages) which managers typically receive and must make decisions about. An In-Basket is commonly used by large companies to measure decision making skills and abilities.

As a group, you'll play the role of a sales manager going through items in her In-Basket. You'll decide what action(s) you believe should be taken for each item, and you'll also rate the importance of each item.

Background on project:
- I'm working for an OSU professor of psychology.
- He is consulting with a "large midwestern insurance company" who is sponsoring this research.
- This company is currently involved in a major effort to develop improved strategies for team decision making.
- Reasons for interest in team decision making.

OK, since you'll be working as a group, take a few minutes to introduce yourselves.

Before you start the group exercise, I'll give you the Hidden Figures Test which you'll work on individually. The Hidden Figures Test is an indirect measure of decision making abilities. It correlates highly with the quality and speed with which persons make decisions.

After you complete the Hidden Figures Test, I'll take the tests to the next room so they can be scored immediately. The person scoring highest will be selected as the coordinator for the In-Basket. This will allow us to look at how a group leader affects the decision making process.
Administer HFT.

Collect and "take to score".

Return and read In-Basket instructions aloud while participants follow with their copies.
SUPERVISOR'S OPENING REMARKS

My name is Paula Hogan. I'm a graduate student in Industrial Psychology. The experiment you're here for today is a study about the way people make decisions in groups. You'll be taking part in a group decision making exercise called an In-Basket. An In-Basket contains items (e.g., letters, phone messages) which managers typically receive and must make decisions about.

As a group, you'll play the role of a sales manager going through items in her In-Basket. You'll rate the importance of each item or prioritize the items.

Ok, since you'll be working as a group, take a few minutes to introduce yourselves.

Before you start the group exercise, I'll give you the Hidden Figures Test which you'll work on individually. The Hidden Figures Test is an indirect measure of decision making abilities. It correlates highly with the quality and speed with which persons make decisions.

After you complete the Hidden Figures Test, I'll take the tests to the next room so they can be scored immediately. The person scoring highest will be selected as the coordinator for the In-Basket.

Administer HFT.

Collect and "take to score".

Return and read In-Basket instructions aloud while participants follow with their copies.
APPENDIX E

IN-BASKET ADMINISTRATION GUIDELINES
FOR THE SUPERVISOR AND
PARTICIPANT INSTRUCTIONS
a. Enriched Task Condition
b. Unenriched Task Condition
**In-Basket Exercise**

**BACKGROUND**
Psychologists Press, Inc. is a nationally competitive publisher of psychological texts, tests, and related materials. The company is divided into six regions across the country.

***"The name of the company and the people's names have been changed, but these are authentic items found in an upper-level manager's In-Basket. You're the only group that will be working on this particular In-Basket."

**YOUR ROLE**
As a group, you are to act as the Sales Manager (Andrea Arps) for the midwestern region. You have held this position for the past two years.

**YOUR SITUATION**
Today is Thursday, Dec. 15. The time is 9:15 a.m. You have just walked into your office and plan to go through the items in your In-Basket.

**YOUR ASSIGNMENT**
Your equipment for this exercise consists of an organization chart, the contents of the In-Basket on your desk, and In-Basket item evaluation forms.

***"Read organization chart aloud."

Make any assumptions you feel to be reasonable in order to fill in information not explicitly stated in the In-Basket items. As a group, consider the items and decide what action(s) should be taken. State, very briefly the reason(s) for the action(s). Then rate the importance

**Note:** "***" indicates supervisor comments and guidelines.
or urgency of the item. In other words, prioritize the items. Use the following scale to rate each item:

<table>
<thead>
<tr>
<th>Action(s):</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>must be</td>
<td>could wait</td>
<td>could wait</td>
<td>not</td>
<td></td>
</tr>
<tr>
<td>taken today</td>
<td>until</td>
<td>until next</td>
<td>necessary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tomorrow</td>
<td>week or</td>
<td>later</td>
<td></td>
</tr>
</tbody>
</table>

In prioritizing the items, your principal consideration should be whether there may be negative consequences associated with postponing action. For instance, issues that could have a substantial financial impact on the organization, such as acquiring or losing an account, and requests from supervisors demanding prompt reply, are the types of items that would generally merit a rating of "1". On the other hand, action(s) in response to inconsequential requests from persons outside the organization could safely wait until next week, i.e., a rating of "3".

***"These are just general guidelines. You're to use your own judgment and discretion in deciding how to handle the issues."

PROCEDURE

A group coordinator will read each item aloud while the group members read silently. Then each person will give his/her opinion on handling the item. The coordinator will ensure that each group member expresses his/her ideas for each item. After listening to each member's opinions, the coordinator will make the final decisions which should reflect consensus opinion and will then record them on the item evaluation form. Upon completion of the item, it should be placed in the "out-basket" along with the evaluation form.

40 minutes has been allotted for the task. If you finish all 16 items in that time, reconsider those items for which there were differences of opinion. Changes may be made at this time.
***"Try to pace yourselves so as to complete all 16 items."
***"If you complete all 16 items in the 40 minutes, you've done very well."
***"The session will be taped so that we can better understand the processes involved in making these decisions. The tape will be confidential."
***"Since it's difficult to hold your attention on a task for a 40-minute period, we want you to decide, as a group, when you want to take a two-minute break. During the break, the coordinator should turn the tape recorder off."
***I'll see if the Hidden Figures Tests have been scored."

Leave room.

***"Upon return: "OK, code number ____________, you scored the highest. Would you act as the coordinator?"

***Observe practice item; address problems and/or questions.

***Leave room.
In-Basket Exercise

BACKGROUND
Psychologists Press, Inc. is a nationally competitive publisher of psychological texts, tests, and related materials. The company is divided into six regions across the country.

YOUR ROLE
As a group, you are to act as the Sales Manager (Andrea Arps) for the midwestern region. You have held this position for the past two years.

YOUR SITUATION
Today is Thursday, Dec. 15. The time is 9:15 a.m. You have just walked into your In-Basket and plan to go through the items in your In-Basket.

YOUR ASSIGNMENT
Your equipment for this exercise consists of an organization chart and 16 items of a 48-item In-Basket.

***Pull out In-Basket Segment I. "Other groups will work on segments II and III of the In-Basket." Read organization chart aloud.

Make any assumptions you feel to be reasonable in order to fill in information not explicitly stated in the In-Basket items. Consider each item and decide how important or urgent the item is. In other words, prioritize the items. Use the following scale to rate each item:

1-----------------------2
High                      Low
Priority                   Priority

Note: "***" indicates supervisor comments and guidelines.
The following criteria are to be used in prioritizing the items.

**A rating of "1" should be assigned to:**
- Issues that could have a substantial financial impact on the organization such as acquiring or losing an account, lawsuits, etc.
- Requests from supervisors demanding prompt reply.
- Serious personnel problems.

**A rating of "2" should be assigned to:**
- Issues that require no response.
- Commonplace employee conflict.
- Inconsequential requests from persons inside and outside the organization.

***"You must adhere to these criteria when rating the items."

**PROCEDURE**

A group coordinator will read each item aloud while the group members read silently. Then each person will give his/her opinion on the rating the item deserves. The coordinator will ensure that each group member expresses his/her opinion for each item.

40 minutes has been allotted for the task. When you finish all 16 items, go back through the items. Start with item 1, reread, and reconsider your original rating. Changes may be made at this time.

***"The session will be taped and the purpose of the recording is to ensure that this procedure is followed exactly. The tape will be confidential."

***"You must work on the task for the entire 40 minutes and go back through the items in the specified order. However, I want you to take a two-minute break halfway through the session as it is difficult to hold your attention on a task for a straight 40-minute period. During this time, the coordinator should turn the tape recorder off."

***"I'll see if the Hidden Figures Tests have been scored."

Leave room.
***Upon return: "OK, code number ____________, you scored the highest.
Would you act as the coordinator?"
***Observe practice item; address problems and/or questions.
***Leave room.
APPENDIX F

IN-BASKET ITEM EVALUATION FORM
IN-BASKET

EVALUATION FORM

Action(s) you are going to take: Please check and respond to question on line provided.

________________________________________________________________________________________
Ignore or discard.

________________________________________________________________________________________
File for reference.

________________________________________________________________________________________
Refer/forward (to whom?).

________________________________________________________________________________________
Delegate action (to whom?).

________________________________________________________________________________________
Seek more information (from whom?).

________________________________________________________________________________________
Telephone (to whom?).

________________________________________________________________________________________
Written correspondence (to whom?).

________________________________________________________________________________________
Schedule appointment (with whom?).

________________________________________________________________________________________
Go see (whom?).

________________________________________________________________________________________
Other (specify).

Briefly note reason(s) for action(s):

Prioritize the item: Circle appropriate response.

Action(s): 1———2———3———4
must be could wait could wait not
taken today until until next necessary
until tomorrow week or later
APPENDIX G

SOCIAL CUES SCRIPTS:

a. Positive Cues Condition
b. Negative Cues Condition
POSITIVE CUES SCRIPT

First Exit

Confederate: This sounds interesting - pretty involved.
Coordinator: Yeah, seems like this could be really important since you can't experiment with decisions and stuff in a real company.

Second Exit

Confederate: Sounds like this In-Basket will give us a chance to use a lot of different skills you need in a real job.
Coordinator: Yeah, it sounds good.

Two-Minute Break

Confederate: The longer we work on this, the more I feel like I'm getting the hang of it.
Coordinator: Yeah, I think we got a real good idea of what we're supposed to do.
Confederate: This is really good because it gives you an idea of the kinds of things upper managers have to deal with. Seems like the higher you get in a company, the better you have to be at handling conflicts.

I think it's fun to make these kinds of decisions—good thing since I'm planning to get into management.
Coordinator: Yeah, me too. This is good especially compared to the other experiment I was in. We had to say what kind of fruit we were most like, animal, plant . . . it was a joke.

After Session

Coordinator: The 40 minutes are up. Let's stop. That was interesting. Feels like we accomplished something.
Confederate: Yeah, time sure goes by a lot faster when you get to work on something like this that makes you think and when you get to decide how you want to do things.
NEGATIVE CUES SCRIPT

First Exit

Confederate: This sounds boring – really monotonous.

Coordinator: Yeah, seems really stupid to have psych 100 students work on this In-Basket thing. I don't know how it could tell you anything.

Second Exit

Confederate: Sounds like we'll have to keep doing the same thing over and over on this In-Basket thing.

Coordinator: Yeah, boring.

Two-Minute Break

Confederate: It's impossible to know whether you're doing this right or not, no matter how long you work on it.

Coordinator: Yeah, I don't think we got a very good idea of what we're supposed to do.

Confederate: This is really dumb anyway because it's nothing like what upper managers do – making decisions on all this trivial stuff.

I'd never want to get into management if this is what it were really like.

Coordinator: Yeah, same here. This is especially bad compared to the other experiment I was in. We got to play video games on microcomputers and compete with each other . . . it was neat.

After Session

Coordinator: The 40 minutes are up. Let's stop. What a bore. It could have been OK maybe if we had made decisions on a few memos and then followed through – like writing letters and memos back. So, at least, you'd feel like you'd done something.

Confederate: Yeah, time really drags when you have to sit through things like this where you don't have to think and you have to do things exactly the way they say.
APPENDIX H

1. TASK REACTIONS QUESTIONNAIRE
2. LISTING OF ITEMS COMPRISING THE SUBSCALES
YOUR CODE NUMBER:

TASK REACTIONS QUESTIONNAIRE

This three-section questionnaire is designed to measure your reactions to the group decision-making exercise. Your responses are anonymous. Please be as honest as possible. There are no trick questions.

If you have any questions, don't hesitate to ask the supervisor.

Thank you for your cooperation.

GENERAL DIRECTIONS

Please read each statement carefully and rate your extent of agreement or disagreement with the statement using this scale:

1---------2---------3---------4---------5---------6------7
Disagree Disagree Disagree Neutral Agree Agree Agree
Strongly Slightly Slightly Strongly

This scale is to be used for all statements in the questionnaire.

Indicate your response choice by writing in a number from 1 to 7 in the blank to the left of each item.

Specific instructions are given at the start of each section.
SECTION ONE: DIRECTIONS

This section of the questionnaire asks you to describe the characteristics of the group coordinator.

Use this scale when responding:

1---------------------2----------------------3----------------------4-------------------5-------------------6-------------------7
Disagree Disagree Disagree Neutral Agree Agree Agree
Strongly Slightly Slightly Strongly

___ 1. The group coordinator enjoyed his/her leadership role.
___ 2. The coordinator enjoyed the task itself.
___ 3. The coordinator made sure that the group followed the task instructions.
___ 4. I would be happy to make important real-life decisions under the leadership of this coordinator.
___ 5. The coordinator did not encourage an open exchange of opinions.
___ 6. The coordinator displayed a high level of decision making skill.

SECTION TWO: DIRECTIONS

This section of the questionnaire asks you to describe the group decision-making task, and the study itself, as objectively as you can. Please do not use this part of the questionnaire to show how much you liked or disliked the task. Questions about that are in the third section. Instead, try to make your descriptions as accurate and objective as you can - ignoring whether you liked or disliked the task.

___ 7. There was not much variety in this decision-making task.
___ 8. We were given freedom to take the initiative and to use our own judgment in deciding how to proceed with the task.
___ 9. As we worked on the task, I did not have a sense of making progress.
<table>
<thead>
<tr>
<th>Disagree</th>
<th>Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Agree</th>
<th>Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly</td>
<td>Slightly</td>
<td>Slightly</td>
<td>Strongly</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. The task required the use of a variety of skills and abilities.
11. This task was structured so that we did not have much freedom regarding how we carried out the work.
12. I felt we had the chance to complete a whole task (i.e., from beginning to end).
13. The task was arranged so that I was able to determine or gauge the progress we were making.
14. This task was quite repetitious.
15. I felt a sense of having accomplished a complete task.
16. The results of this study could have a significant impact on the work world.
17. The task was such that we could not monitor or measure our progress as we worked on the task.
18. We were permitted to decide on our own how to go about doing the task.
19. Just working on the task gave us "feedback" on how well we were performing.
20. This task provided the opportunity to perform a number of different activities.
21. There was no tangible or visible outcome of our work.
22. We had control over how we carried out the work session.
23. The task itself provided very few clues about whether or not we were performing well.
24. I did not feel a sense of having accomplished a "whole" task.
25. This task required the use of a number of complex, high-level skills.
26. The results of this study are likely to have important effects on other people.
27. The outcome or end-product of our work was visible or apparent.
28. Just doing the work required by the task provided many chances for me to figure out how well we were doing.
29. We were not able to see the project through to completion.

30. This study is not likely to contribute to a better understanding of the way in which teams make decisions in companies.

31. The results of our work could significantly affect the lives of other people.

32. The work we did on this task was meaningful.

SECTION THREE: DIRECTIONS

This section of the questionnaire asks you to indicate how you personally feel about the task and how you think your coworkers feel. Your responses to the statements should reflect your feelings about the task.

33. I would feel a great sense of personal satisfaction from performing this task well.

34. The members of my group found the task interesting.

35. I would enjoy doing this task again.

36. I would feel bad and unhappy if I discovered that I performed poorly on this task.

37. The members of my group would not feel bad and unhappy if they found that we performed the task poorly.

38. Generally speaking, I was not very satisfied with the task.

39. The members of my group were bored while working on this task.

40. The members of my group would feel a great sense of personal satisfaction from performing this task well.

41. I was bored while working on this task.

42. The members of my group were not generally satisfied with the kind of work required by this task.

43. My own feelings would not be affected much one way or the other by how well I did on this task.
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</table>

44. This task was interesting to me.
45. I truly enjoyed this task.
46. My coworkers thought the task was important.
47. My coworkers thought we got to do different things requiring a variety of skills.
48. My coworkers were able to figure out how well we were doing on the task.
49. My coworkers felt a sense of accomplishment.
50. My coworkers thought we had freedom in how we carried out the task.
51. My coworkers enjoyed the task.
### ITEMS COMPRISING QUESTIONNAIRE SUBSCALES

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<thead>
<tr>
<th>SUBSCALE</th>
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<tr>
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<td>Task identity</td>
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<td>Task significance</td>
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<td>Social cue manipulation checks</td>
<td>34, 37, 39, 40, 42, 46-51</td>
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</table>
LIST OF REFERENCES


Clark, P. M. (1985a). Personal communication.

Clark, P. M. (1985b). Personal communication.


