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ANTECEDENTS AND CONSEQUENCES OF JOB-RELATED TENSION AMONG INFORMATION SYSTEMS AUDITORS

by

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Abstract

This exploratory study empirically examines the antecedents and consequences of job-related tension for practicing Information Systems (IS) auditors — a critically important group of internal control professionals previously unexamined by the existing body of behavioral research. The absence of research involving these professionals leaves open the question of whether the suggestions made as the result of previous research involving auditors in general are applicable to this specialized group. Path analysis is used to examine data from a sample of practicing IS auditors to test relationships identified in previous research as affecting the job-related tension of general auditors. The results of this study are generally consistent with the existing research and suggest that management may take steps to beneficially reduce the job-related tension of IS auditors. A number of suggestions as to specific steps available to management in this regard are offered.

Introduction and Background

There is a large body of behavioral research addressing professionals in relation to the elements and factors affecting their behavior in their employing organizations. A practical motivation for these studies involves identification of factors or conditions that may be associated with dysfunctional outcomes or consequences. The rationale is that if these factors or circumstances can be identified, management may be able to take steps to alter them in ways that may lead to the elimination or reduction of the undesirable consequences. Job-related tension is one factor identified in the existing research as a potential source of dysfunctional consequences among professionals. The existing research also identifies a number of antecedent factors that may contribute to and individual’s expressed level of job-related tension.

Although the existing research addresses behavioral issues such as job-related tension for members of a number of professional groups, information systems (IS) auditors have generally been ignored as a group by the research in this area. There are possibly two readily identifiable reasons for the relative absence of behavioral research addressing IS auditors. One reason for this situation may be the recent emergence of both the information systems auditing profession and the critical role of IS auditors in organizations. However, the growing computerization of accounting, management, production, and other organizational functions has rapidly established the importance of IS auditors in modern organizations. An additional reason for this situation may be an
assumption that the factors and consequences identified in existing research for traditional independent auditors or internal auditors are directly applicable to IS auditors. The validity of this assumption can only be supported by empirical research involving IS auditors.

This study is an exploratory examination designed to determine if the various significant associations of antecedents and consequences with job–related tension reported for other professional auditors are present for a sample of IS auditors. If these associations are present and eventually prove to be generalizable to all IS auditors, then the suggestions and findings of the existing research may potentially be used to reduce job–related tension among IS auditors. Such a reduction would benefit both the individual IS auditor and the organization given the various detrimental consequences that have been linked to job–related tension.

The discussion that follows identifies the various antecedents and consequences of job–related tension examined in previous research involving independent and internal auditors and describes the hypothesized model of these elements examined in this study. That discussion is followed by the identification of the research procedures used to obtain and analyze the data used to test the hypothesized relationships included in the model. The results of the data analysis and the hypothesis testing are discussed and the conclusions based on those results are presented.

**Job–Related Tension, Antecedents, and Consequences**

**Job–Related Tension**

Job–related tension (JRT) represents tension and pressure due to job requirements and may be associated with adverse physical symptoms, worry, and irritability [House and Rizzo, 1972]. One characterization of job–related tension is that it “can be viewed as the strain or mental ill health associated with working at one’s job” [Collins, 1993, p. 30]. A number of dysfunctional consequences such as job dissatisfaction, increased turnover, decreased performance and reduced organizational commitment have been associated with job–related tension [Rebele and Michaels, 1990; Jackson and Schuler, 1985]. There are also a number of antecedents (i.e., organization and personal characteristics) that are suggested by the same body of previous research as being associated with job–related tension including role conflict, role ambiguity, and participation in
decision making. The following discussions indicate the nature of these antecedents and consequences and the discuss the bases for the hypothesized relationships shown in Table 1 and included in the full hypothesized model of all of the various relationships shown in Figure 1.

Antecedents of JRT

Role Conflict

Role conflict is defined in one case as "the simultaneous occurrence of two (or more) sets of pressures such that compliance with one would make difficult or impossible compliance with the other" [Wolfe and Snoek, 1962, p. 103]. Role conflict can also be viewed as an incongruity between the various expectations associated with one's role in a particular position in an organization [Van Sell et al., 1981]. Role conflict places the individual between the proverbial "rock and hard place" due to mutually exclusive expectations.

There are a number of different sources of role conflict, all related to what one is expected to do and/or how one is "supposed" to act in a particular role or position. One source of role conflict may be incompatible or contradictory expectations from another person with whom the individual is associated (e.g. from a supervisor, a colleague, or a subordinate). For example, an IS auditor's supervisor may expect that a particular task not only be thoroughly and completely accomplished but be done under an overly restrictive time constraint. These potentially contradictory expectations would produce conflict for the auditor. Another source of role conflict occurs when the sets of expectations from two individuals associated with the IS auditor are incompatible. In this case, an IS auditor's colleague (or a client) may have certain expectations for the auditor that are not consistent with the expectations of the auditor's supervisor. An individual may also be subject to conflict due to incompatibilities between his or her own sets of expectations for the particular role and the expectation of others for that role. All of these sources of conflict may combine to produce a situation of role overload in which the individual is expected to engage in a number of potentially mutually exclusive types of behavior associated with the role. [Kahn et al., 1964]
Existing research in this area has linked role conflict with increased levels of stress and anxiety for individuals in a number of professional and occupational areas [Van Sell, et al., 1981]. In a study of 155 independent auditors, Rebele and Michaels [1990] report a significant positive relationship between role conflict and job related tension. These considerations suggest the positive direct relationship between role conflict and JRT shown in Table 1 and also included in the hypothesized model shown in Figure 1.

Role Ambiguity

Role ambiguity is generally defined as the absence of clear information regarding (1) the expectations associated with one's role, (2) the methods for meeting the expectations associated with the role and/or (3) the outcomes of role performance [Van Sell, et al., 1981]. The individual may not be clear as to what is expected. Even if what is expected is clear, there may be no information regarding how those expectations are to be met. There may also be no information that indicates what will happen if the expectations are met (i.e., how the individual will be judged). For example, the individual may be told to "do your best" in performing his or her role. While this directive provides a great deal of latitude for compliance, it also provides a certain degree of ambiguity as to what is expected, how tasks are to be accomplished and/or how one can demonstrate that this or his "best" was indeed accomplished.

In practical application role ambiguity may be fostered by an absence in the organization of such things as job descriptions, adequate audit guidelines, standard procedures, organizational policies, clearly specified goals, specifications of job scope or responsibilities, etc. The existing research addressing role ambiguity indicates that high levels of ambiguity are related to increased stress and anxiety [Van Sell, et al., 1981]. These results suggest the direct positive relationship between role ambiguity and JRT shown in Table 1 and in the hypothesized model in Figure 1.

Participation in Decision Making

The degrees to which individuals participate in decision making is related to the manner in which power is distributed among positions in an organization. Such participation involves (1) participation in decision making regarding resource allocation and policy determination and/or (2)
the degree to which individuals are allowed to make their own work decisions without reliance upon superordinates.

High levels of participation in decision making are generally associated with reduced levels of job strain [Ivancevich and Donnelly, 1974; Jackson and Schuler, 1985]. One suggested reason that such participation reduces tension is that participation allows the individual to clarify expectations, to negotiate away conflicting demands, or to resolve potentially conflicting or ambiguous expectations from others [Fisher and Gitelson, 1983]. These considerations lead to the inverse relationship hypothesized between participation in decision making and JRT as shown in Table 1 and the hypothesized model in Figure 1.

Consequences of JRT

Organizational Commitment

Organizational commitment is characterized by the degree of an individual's identification with and involvement in a particular organization. Commitment conceptually involves "(1) a strong belief in and acceptance of the organization's goals and values, (2) a willingness to exert considerable effort on behalf of the organization, and (3) a strong desire to maintain membership in the organization" [Mowday, et al., 1982]. Research addressing organization commitment has indicated that such commitment is a predictor of employee retention and increased employee effort and performance [Angle and Perry, 1981]. Organizations composed of highly committed members therefore may experience greater stability and increased effectiveness due to the high degree of effort that these individuals are willing to expend on behalf of the organization.

Organizational commitment is considered a consequence of job-related tension due to the detrimental effect of such tension on the individual's loyalty to the organization. A high level of job-related tension will conceivably reduce the individual's belief in and acceptance of an organization's goals, dampen one's desire to exert effort on behalf of the organization and even detract from the desire to maintain membership in the organization. These factors suggest the direct inverse relationship between organizational commitment and JRT shown in the hypothesized model in Figure 1 and in Table 1.
Job Satisfaction

Job satisfaction represents a pleasurable or positive emotional state based on the results of an appraisal of one's job or job experiences [Locke, 1976; Vandenberg and Lance, 1992]. Job satisfaction is also characterized as the feeling that one has toward his or her job and may be a function of the perceived characteristics of the job in relation to the person's frames of reference. Job satisfaction is generally reported to be inversely correlated with job-related tension among general auditors [Rebele and Michaels, 1990]. This is understandable given that job-related tension is one of the characteristics that would be of importance in an individual's appraisal of his or her feelings about the job.

Data Gathering and Hypothesis Testing

Data Gathering

One hundred and sixteen members of the National Capital Area Chapter of the EDPAA participated in this pilot study. The participants included practicing IS auditors from public accounting, industry and government. Each participant completed an extensive questionnaire designed to measure his or her degree of job-related tension and a number of its reported antecedents and consequences. The scales used to measure these elements were identical to those used in the research studies examining these considerations for other groups of professionals. Each of the scales included multiple measurement items in order to establish the consistency of an individual's responses. An examination using an alpha value [Cronbach, 1951] indicated an acceptable level of internal validity of each of the scales.

Data Analysis and Hypothesis Testing

This study, like the prior studies [Harrell, Chewning, and Taylor, 1986; Pei and Davis, 1989] utilizes path analysis to determine the existence of significant direct and indirect relationships between the variables under consideration. This procedure involved the use of a series of regression analyses with differing dependent variables and differing sets of independent variables. Table 1 indicates the various hypotheses examined in this study. Table 2 indicates the dependent variables and sets of independent variables used in each path analysis regression model to test the
hypothesized relationships among the variables. In accordance with the path analysis procedure, the existence of a statistically significant path coefficient (standardized beta coefficient) between two variables indicates the existence of a significant path (direct relationship) between those two variables when the effects due to all other variables are controlled [Harrell, et al., 1986]. The path coefficient measures the fraction of the standard deviation of the endogenous variables for which the designated variable is directly responsible [Land, 1969, p. 8]. Therefore, the hypotheses identified in Table 1 study are tested by determining the statistical significance of the path coefficient present between the two variables expressed in each hypothesis. The results of the path analysis of the variables in question are shown in Table 2. That table shows the beta weight (path coefficient) for each of the hypothesized relationships. The table also indicates the statistical significance of each of those weights.

As described by Harrell, et al. [1986] the path analysis procedure used to test the hypothesized relationships may also reveal any unhypothesized direct relationships between variables. Figure 2 provides a graphical representation of the empirically derived significant relationships between the variables included in the analysis. The relationships shown include not only any significant direct hypothesized relationships but also any unhypothesized relationships that emerged from the process.

**Discussion of the Results of the Hypothesis Testing**

As shown by the significant betas in Table 2 and graphically in Figure 2, the data indicate mixed results regarding the hypothesized relationships between job-related tension and the various hypothesized antecedents examined in this study. Neither $H_1$ nor $H_2$ are rejected by the data thus suggesting direct positive relationships between job-related tension and both role ambiguity and role conflict. On the other hand, the data do indicate that $H_3$ must be rejected indicating no significant relationship between participation in decision making and job-related tension. However, as shown in Figure 2, the path analysis process indicates the presence of a significant direct positive relationship between participation in decision making and the reported level of job satisfaction of the participating IS auditors. Therefore, rather than working through job-related
tension to affect job satisfaction (as hypothesized in the original model), participation in decision making apparently has a significant direct relationship with job satisfaction.

In regard to the hypothesized outcomes of job-related tension for IS auditors, the results are somewhat mixed. The data indicate that H4 must be rejected thereby indicating no direct relationship between job-related tension and organizational commitment. On the other hand, the data do not reject H5 thus indicating a significant direct inverse relationship between job-related tension and job satisfaction.

As indicated in the discussion regarding the path analysis process, that process will result in the identification of existing significant relationships between variables in an hypothesized model even if those relationships were not intentionally the objects of direct examination. The data in this study indicate the presence of two of these types of relationships as shown in the model in Figure 2. The data indicate that role ambiguity not only has a direct relationship with job-related tension as included in the hypothesized model but also has an unhypothesized direct inverse relationship with organizational commitment. Although this relationship was not the object of direct examination in this study, the relationship is not unanticipated given the results of previous research in this area. In a similar manner the data indicated an unhypothesized direct positive relationship between organizational commitment and job satisfaction (as shown in model in Figure 2). This relationship, also, is not unanticipated given its consistency with previous research in this area.

**Implications of the Findings of this Study for Management**

The significant positive relationship indicated by the data between role conflict and job-related tension suggest that in order to reduce job-related tension, management should ensure that the expectations that individual IS auditors face are consistent and not contradictory. For example, supervisors should be realistic in their allotments of time for the auditor to accomplish a task. This would reduce the potential conflict arising from expecting thorough results under inadequate time constraints. Taking steps that lead to all members of the IS audit function "buying in" to the same goals and objectives may help to reduce conflicting expectation from supervisors and colleagues.
Ensuring that clients clearly understand the role and responsibilities of the IS auditors may also help eliminate incompatible sets of expectations. Operation of the IS function under promulgated professional standards may help reduce any potential conflict between the professional IS auditor's own set of expectations and those of the organization. Individually or in combination these actions may help reduce job-related tension where it is present.

The data indicate that addressing role ambiguity may be a critical issue in regard to the job-related tension and organizational commitment of IS auditors. The positive direct relationship between role ambiguity and job-related tension suggests that reducing ambiguity may have a positive effect on IS auditors. Management should consider reducing role ambiguity by providing clear information regarding expectations through such means as clearly identified standard procedures, guidelines, responsibilities, policies, goals, etc. should reduce the level of job-related tension affecting IS auditors. The beneficial effects of these same steps may also affect the commitment of the IS auditor to his or her organization given the finding of a direct inverse relationship between role ambiguity and organizational commitment shown as shown in Figure 2. As indicated graphically in Figure 2, any reduction in role ambiguity would result in a direct decrease in job-related tension and an indirect increase in job satisfaction (as the result of the direct inverse relationship between job-related tension and job satisfaction). In addition, any reduction in role ambiguity would have a positive direct effect on organizational commitment and a positive indirect effect on job satisfaction (working through the direct positive relationship between organizational commitment and job satisfaction). These findings suggest that role ambiguity may be an important factor affecting the relationship between IS auditors and their organization.

Although the relationship indicated by the data between participation in decision making and job satisfaction was not one of the elements of the hypothesized model, the significant positive relationship between these two factors is an important consideration for management. The data indicate a strong positive relationship between participation in decision making and job satisfaction. This suggests that these individuals who participate in decision making are generally better satisfied with their jobs. This suggests, for example, that if the individual IS auditor is allowed to have the
maximum influence possible as to the way in which job tasks are accomplished, then that
individual will be better satisfied with his or her job. Management may therefore wish to consider
couraging individual IS auditors to participate in audit planning, in the development of
procedures and guidelines, and in the definition of goals and objectives for the IS audit function.
These steps may benefit both the individual and the organization by increasing that individual's
level of job satisfaction.

Although the data do not indicate the presence of a direct relationship between job-related
tension and organizational commitment, there is a direct inverse relationship between job-related
tension and job satisfaction. As shown in Figure 2, if job-related tension is decreased, the
individual's level of job satisfaction should increase. This relationship is consistent with previous
research that indicates a strong inverse relationship between job-related tension and the level of
job satisfaction. This is understandable given that job-related tension is one of the characteristics
that would be of importance in an individual's appraisal of his or her feelings about the job. The
potential increases in departmental stability and in individual effort associated with high levels of
job satisfaction in the existing research may be particularly important where IS auditors are
concerned. The information systems auditing field requires a high degree of expertise, knowledge
and skill that require a considerable personal effort to develop. Individuals who are dissatisfied
with their jobs may be far less likely to invest the time and effort necessary for this development.
For this reason, management should be especially sensitive to the level of job satisfaction among
the organization's IS auditors.

Conclusions

The results of the analysis of the data in this study suggests that the antecedents and
consequences of job-related tension for the IS auditor participants are greatly similar to those
reported in the research examining other professionals. Whether these results can be extended to
the entire population of IS auditors must be the subject of future research studies involving larger,
randomly selected samples and more sophisticated data analysis techniques. However, as a pilot
study to identify those antecedents subject to potential management actions that affect job-related
tension, this study provides a number of potentially useful insights.

The results of this study suggest a number of areas that are potentially beneficial to the individual IS auditors and to their employing organizations. Management actions to reduce the levels of role ambiguity and role conflict faced by IS auditors will apparently reduce job–related tension for those professionals. Reducing job–related tension is a beneficial step given the inverse relationship between that factor and the individual's level of job satisfaction. Therefore, consistency and clarity of what is expected from an IS auditor should greatly benefit both the individual and the organization. Reducing role ambiguity may be especially important given the total positive effect of such a reduction on job satisfaction working through both job–related tension and organizational commitment. Allowing the maximum extent of individual IS auditor participation in decision making should produce a positive effect on job satisfaction. Management may take steps that affect individually or in concert the relationships indicated by the results of this study with the end result being that both the individual and the organization benefit.
References


Table 1
Hypothesized Relationships

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<tr>
<th>Antecedents of Job-Related Tension:</th>
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<tbody>
<tr>
<td>( H_1 ): There is a direct positive relationship between Role Conflict and the individual IS auditor's level of Job-Related Tension.</td>
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<td>( H_2 ): There is a direct positive relationship between Role Ambiguity and the individual IS auditor's level of Job-Related Tension.</td>
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<td>( H_3 ): There is a direct inverse relationship between Participation in Decision Making and the individual IS auditor's level of Job-Related Tension.</td>
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<th>Consequences of Job-Related Tension:</th>
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<tr>
<td>( H_4 ): There is a direct inverse relationship between Job-Related Tension and the individual IS auditor's level of Organizational Commitment.</td>
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<td>( H_5 ): There is a direct inverse relationship between Job-Role Ambiguity and the individual IS auditor's level of Job Satisfaction.</td>
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<td>Dependent variable</td>
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<td>Job-Related Tension</td>
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<td>Organizational Commitment</td>
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Figure 1
Hypothesized Model

Role Conflict → + → Job-Related Tension
Role Ambiguity → + → Job-Related Tension
Participation in Decision Making → - → Job-Related Tension

- Job Satisfaction
- Organizational Commitment
Figure 2
Derived Model

Role Conflict
+28 (.002)

Role Ambiguity
+24 (.02)

Job-Related Tension
r² = .21

Organizational Commitment
r² = .37

Job Satisfaction
r² = .60

Participation in Decision Making

Signed Values are Standardized Beta Values (path coefficients). Numbers in parenthesis are significance levels.