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CIO Lateral Influence Behaviors: Gaining Peers' Commitment to Strategic Information Systems[1]

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Abstract

In order to develop and bring to fruition strategic information systems (SIS) projects, chief information officers (CIOs) must be able to effectively influence their peers. This research examines the relationship between CIO influence behaviors and the successfulness of influence outcomes, utilizing a revised model initially developed by Yukl (1994). Focused interviews were first conducted with CIOs and their peers to gain insights into the phenomenon. A survey instrument was then developed and distributed to a sample of CIO and peer executive pairs to gather data with which to test a research model. A total of 69 pairs of surveys were eventually used for data analysis. The research model was found to be generally meaningful in the CIO–top management context. Furthermore, the influence behaviors rational persuasion *and* personal appeal *exhibited significant relationships with peer commitment, whereas* exchange *and* pressure *were significantly related to peer resistance. These results provide useful guidance to CIOs who wish to propose strategic information systems to peers.*

Keywords: Chief information officers, influence, influence behaviors, information systems, PLS

ISRL Categories: EH0101, AA01, EH0208

Introduction ■■■■■■■

Since no idea is intrinsically strategic or important, the give-and-take of senior managers about what matters largely determines which initiatives are implemented (Dutton and Ashford 1993; Floyd and Wooldridge 1996). Within this give-and-take context, a critical part of the chief information officer's (CIO's) strategic role is to provide thought leadership to other top executives, making them aware of the potential for information systems to support and enhance the strategy of the firm (Earl and Feeny 1994; Stephens et al. 1992). One way CIOs do this is to effect proactive influence behaviors to convince other top managers to allocate attention and resources to strategic information systems (SIS) projects (Lederer and Mendelow 1988; Marron 1997; Rockart 1988; Smith 1998). Indeed, as Fiegener and Coakley (1995) have pointed out, CIOs have an inherent responsibility to do so:

> A CIO's hesitance to exert influence may increase the risks that the agenda for IS will be shaped by other, less knowledgeable sources (p. 58).

Effective organizations recognize that having line managers take ownership of critical IS projects increases the likelihood of appropriate IS deployment and organization success (Rockart 1988; Sambamurthy and Zmud 1997). If a CIO wants a strategic application proposal implemented, he or she requires the commitment of the top management team, without which the project would stand a lesser chance of success (Feeny et al. 1992). Similarly, the practitioner literature suggests that effective CIOs must skillfully apply their powers of influence to encourage other functional heads to become partners with them and embrace ownership of these initiatives (McDougall and McGee 1999; Mitchell 2000; Smith 1998).

In the past, when most CIOs were not part of the top management team, they often needed to apply different forms of *upward* influence to convince top management to seriously consider SIS projects, with varying degrees of success (Applegate and Elam 1992; Lederer and Mendelow 1988; Rockart

1988). More recently, as they have gained acceptance on their firms' top management teams, CIOs require skills at applying *lateral* influence, in order to convince their peers in other functional areas to commit to SIS initiatives (Maruca 2000; Ross and Feeny 2000). There is evidence that CIOs may be less effective than their executive counterparts in proactively exerting peer-level influence (Marron 1997; Smith 1998). For example, Earl and Feeny (1994) have pointed out that CIOs often mistakenly attempt to use "hard" tactics such as edicts, which do not work as well as "softer" tactics like persuasion and participation.

The research literature has not systematically examined CIOs' influence behavior usage patterns—which influence behaviors CIOs use to convince their peers to commit to SIS projects or their effectiveness at doing so—despite the fact that this as an important topic for examination (Earl and Feeny 1994; Fiegener and Coakley 1995; Lederer and Mendelow 1988). The present study draws primarily upon survey data to address the question: Which lateral CIO influence behaviors result in successful influence outcomes in the SIS–peer context?

The next section provides a literature review, discusses the research model, and develops propositions based on the extant literature and, to a lesser extent, anecdotal evidence from a series of executive interviews. Subsequently, we provide the research methodology used for data collection and analysis in the main study and describe the results. The final section of the paper discusses the implications of this study both for future research and practical application.

Theory and Proposition Development ■■■■■■■

Literature Review and Research Model

In order to clarify the CIO–peer influence context, it is important to distinguish between influence and authority. Simon (1953) views authority as the

legitimate exercise of decision making that affects the behavior of individuals. Thus, subordinates agree without question to the decisions of a superior and are willing to set aside any judgments about the suitability of a superior's request or behave as if they agreed with the superior. Similarly, Tannenbaum (1958) views authority as designated across hierarchical management positions. It is also commonly recognized that a superior relies on advice or information from others, including subordinates. This advice or information comprises influence (Tannenbaum and Massarik 1950). Thus, a person exerts influence by offering information, providing advice, persuading, and the like. Importantly, in contrast with authority that flows downward, influence can be multidirectional. Thus, individuals have the capacity to influence superiors or colleagues. The dispersion of influence permits actors from all levels in the organization to make their expertise felt in specific decision areas (Bacharach and Lawler 1980, p. 31). The distinction between authority and influence is important in situations where CIOs do not possess formal authority. Specifically, CIOs must rely primarily on influence to affect the thinking and behavior of their peers.

The research literature on senior IS management provides some other important insights into the CIO–peer influence context. For example, it illustrates the conditions under which a CIO's influence behaviors can be most effective when he or she attempts to initiate SIS projects that require peer commitments. Good working relationships with peers are a necessary condition for the success of IT executives (Earl 1993; Henderson 1990; Keen 1991; Stephens et al. 1992). The CIO requires integrity and interpersonal skills in order to develop these important relationships (Kotter 1982). These effective working relationships set the stage for CIOs to successfully approach peers in a "personal informal" style (Pyburn 1983), to make casual contact with peers to discuss these initiatives and build support before a formal proposal is discussed (Feeny et al. 1992).

Other IS research has examined the ways in which CIOs communicate with other executives to build shared understanding and knowledge around the issue of IT alignment with the business

(Applegate and Elam 1992; Earl 1993; Feeny et al. 1992). IS projects that are aligned with the overall strategic direction of the firm will be more successful and readily accepted than those that are not (Chan et al. 1997; Earl 1993; Earl and Feeny 1994). A shared vision of the role of IS in the business is an important determinant of SIS project success (Earl and Feeny 1994). Effective communication and shared vision among senior managers form a chain that impacts the overall success of the organization (Reich and Benbasat 1996). CIO influence behaviors comprise an important part of the CIO-peer communications that lead to the development of shared vision and SIS project success.

Little research has focused directly on the issue of CIO influence (e.g., Earl and Feeny 1994; Hayashi 1997), despite the fact that effective influence exertion is of interest to CIOs (Marron 1997; Smith 1998). The literature has only discussed a few influence behaviors at the CIO's disposal. For example, coalition and consultation tactics have been effectively used to convince executives of the potential strategic impact of IS (Lederer and Mendelow 1988), to gain acceptance of other executives (Stephens et al. 1992), to achieve a shared vision of IS's role in the organization (Earl and Feeny 1994), and to create a positive impression of the IS department (Fiegener and Coakley 1995). Rational persuasion has been used to identify new uses of IT (Rockart 1988), create a positive view of IS (Earl and Feeny 1994; Fiegener and Coakley 1995), and to convince top managers of the need for greater central IT coordination (Ross and Feeny 2000). Finally, CIO tactics used to overcome resistance to IS implementation include bargaining with IS resources (i.e., exchange), and co-opting opposition (i.e., consultation) (Keen 1981).

More broadly, there has been little systematic research on top executives' lateral influence behaviors. What we do know is based on anecdotal evidence gleaned from interview data gathered to compare effective with ineffective managers (Cohen and Bradford 1989; Kotter 1979 1982; Pfeffer 1992). More effective general managers used a wider variety of influence methods and spent less time on influence activity (Kotter 1982). This suggests there may be significant

Table 1. Influence Behaviors and Definitions (Yukl 1994)	
Influence Behavior	**Definition**
Rational Persuasion	The agent uses logical arguments and factual evidence to persuade the target that a proposal or request is viable and likely to result in the attainment of task objectives.
Consultation	The agent seeks target participation in planning a strategy, activity, or change for which target support and assistance are desired, or is willing to modify a proposal to deal with target concerns and suggestions.
Ingratiation	The agent uses praise, flattery, friendly behavior, or helpful behavior to get the target in a good mood or to think favorably of him or her when asking for something.
Personal Appeals	The agent appeals to target feelings of loyalty and friendship toward him or her when asking for something.
Exchange	The agent offers an exchange of favors, indicates willingness to reciprocate at a later time, or promises a share of the benefits if the target helps accomplish a task.
Coalition Tactics	The agent seeks the aid of others to persuade the target to do something, or uses the support of others as a reason for the target to agree also.
Pressure	The agent uses demands, threats, frequent checking, or persistent reminders to influence the target to do what he or she wants.

differences between top executives' and middle level managers' influence behaviors. Nonetheless, since there are no systematic studies in this area, it is uncertain whether senior executive influence behaviors are significantly different than those of lower-level managers. However, the related work conducted with middle-level managers and supervisors provides a framework for research on CIO influence behaviors.

An important series of studies by Kipnis et al. (1980) examined influence tactics in which the agent (i.e., initiator) of an influence attempt tried to gain something from the target (i.e., recipient). Based on these studies, they developed a survey from narrative descriptions of how individuals "got their way." The survey was administered to 754 lower-level managers. Factor analysis revealed eight influence dimensions: exchange, sanctions, ingratiation, rationality, coalitions, assertiveness, upward appeals, and blocking. This survey was published as the Kipnis-Schmidt (1982) Profiles of Organizational Influence Strategies (POIS).

Yukl and Falbe (1990) modified the POIS instrument, and administered their survey to part-time MBA students. After additional refinements, these authors created the Influence Behavior Questionnaire (IBQ) (Falbe and Yukl 1992). A summary of seven of these influence behaviors is found in Table 1. Two influence behaviors, inspirational appeal and legitimation, are excluded from Table 1 based on our interviews, a survey pretest, and the main study.[2]

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[2]We eliminated inspirational appeal and legitimating from our analysis for the following reasons. There was little mention of inspirational appeal and legitimation in our initial interviews. Also, a telephone conversation was held with all eight executives who pretested the survey to obtain their reaction to the survey. Six of them suggested that the questions related to inspirational appeal and legitimation were more reflective of a superior-subordinate relationship. In the main study, responses to the inspirational appeal and legitimation questions were mostly "1" (i.e., "I can't remember the CIO using this tactic with me"). Therefore, it was not logical for us to test the paths associated with these behaviors, since trying to determine the outcome of not using a behavior made little sense.

Table 2. Lateral Influence Behavior Studies			
Influence Behavior	**Authors**	**Sample**	**Outcome***
Rational Persuasion	Falbe & Yukl 1992	Part-time MBAs	Moderately Effective (i.e., Compliance)
	Yukl & Tracey 1992	24% upper level executives, 62% middle managers, 14% supervisors	Effective (i.e., Commitment)
Consultation	Falbe & Yukl 1992	Same as above	Effective
	Yukl & Tracey 1992	Same as above	Effective
Personal Appeals	Falbe & Yukl 1992	Same as above	Moderately Effective
	Yukl & Tracey 1992	Same as above	Effective
Ingratiation	Falbe & Yukl 1992	Same as above	Moderately Effective
	Yukl & Tracey 1992	Same as above	Effective
Exchange	Falbe & Yukl 1992	Same as above	Moderately Effective
	Yukl & Tracey 1992	Same as above	Effective
Coalition	Falbe & Yukl 1992	Same as above	Resistance
	Yukl & Tracey 1992	Same as above	Not significant
Pressure	Falbe & Yukl 1992	Same as above	Resistance
	Yukl & Tracey 1992	Same as above	Resistance

***Falbe and Yukl (1992)** outcome: Coded 1, 2 or 3

1. *Resistance* target is opposed to the requested action and tries to avoid doing it by refusing, arguing, etc.
2. *Compliance* target carries out the requested action but is apathetic about it rather than enthusiastic.
3. *Commitment* target agrees internally with an action or decision, is enthusiastic about it, and is likely to exercise initiative and demonstrate unusual effort in order to carry out the request successfully.

Yukl and Tracey (1992) outcome based on how many influence attempts resulted in complete commitment (i.e., strong enthusiasm and special effort beyond what is normally expected): 1 = None of them, 4 = About half of them, 7 = All of them.

Influence behaviors, and their effectiveness, vary depending on whether the target is a subordinate, peer, or superior. For instance, rational persuasion is often linked with effective upward influence, while pressure behaviors are more commonly associated with downward influence and are most effective under these conditions (Kipnis et al. 1980; Schilit and Locke 1982). Table 2 summarizes the major lateral influence behavior research, mostly centered on middle-level managers and supervisors, since the paper's focus is on lateral influence.

The literature on lateral influence behaviors suggests that influence leads to a number of possible outcomes. These outcomes are discussed in the proposition development section below. Figure 1 summarizes the discussion about influence behaviors and outcomes. This research model is based primarily on work done with stu-

Figure 1. Research Model
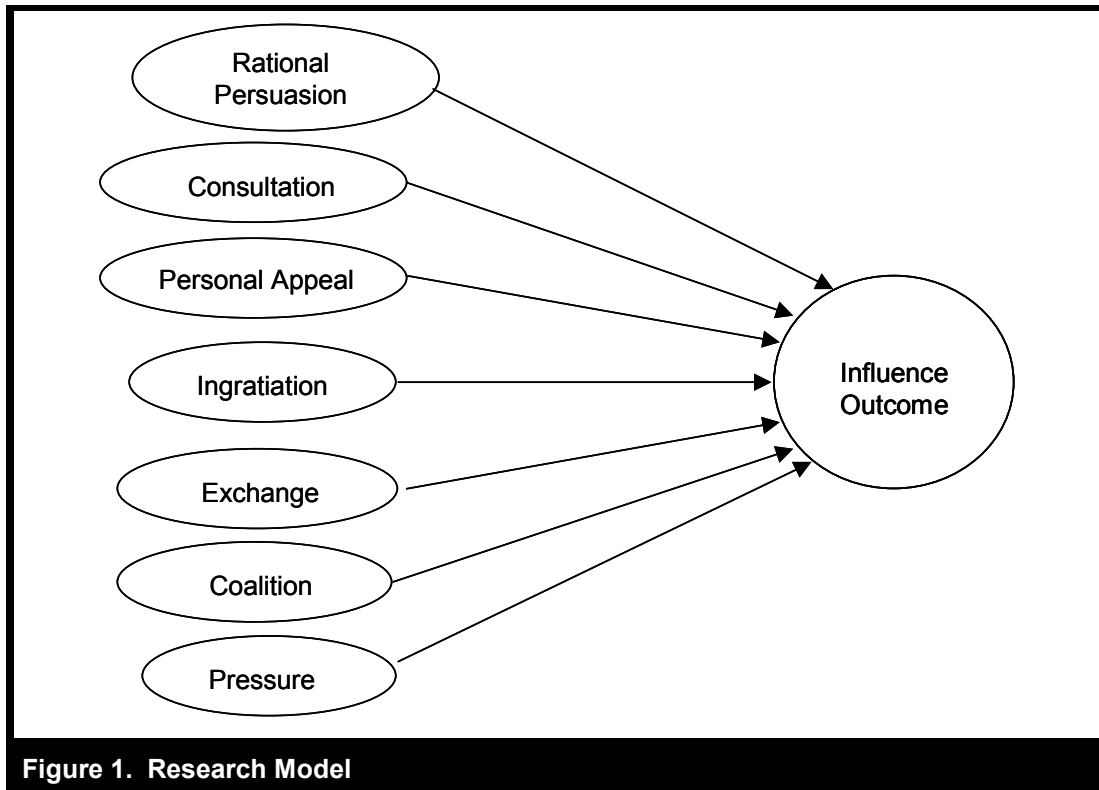
dents, middle-level managers, and first-line supervisors but also accounts for the anecdotal CIO and top executive influence literature. However, this model had not been tested with top executives. Thus, a preliminary series of interviews were conducted to assist in the development of propositions used to test the model.

Exploratory Interviews

Early in the research project, a set of exploratory interviews were conducted with senior IS and non-IS managers so as to better gauge the relevance of the issues, and to develop an initial understanding of actual CIO influence behaviors in the field. A total of 14 interviews in 7 companies were completed. Each executive was provided a copy of the transcribed interview for validation purposes. Peers were interviewed partly to verify responses, and to provide a less biased view of the CIO's influence behaviors. The peer execu-

tives all indicated they had had opportunities to observe the CIOs both succeed and fail in their influence attempts.

The exploratory interviews indicated that all of the CIOs had recently attempted to influence other organizational members about SIS projects. In all cases, this was done initially through informal approaches, followed by more formal approval steps. The interviews also indicated that CIOs varied widely in terms of their influence abilities, and that some influence behaviors were more effective than others. For example, some CIOs used rational persuasion exclusively, and continued to use this tactic even in the face of resistance. As one executive mentioned,

> Our CIO could learn to be more sensitive in this area. He believes that the logic of his arguments [i.e., rational persuasion] should carry the day but this is not always the case.

Proposition Development

The lateral influence behavior literature (see Table 2 for a summary), together with the interview data, was used to create propositions related to the research model (see Figure 1). The constructs on the left side of the model were derived from the adapted Yukl (1994) framework, and are also supported by previous research on peer executive relationships (Cohen and Bradford 1989; Earl and Feeny 1994; Fiegener and Coakley 1995) and middle-level manager and supervisor influence behavior (Yukl 1994).

Previous peer influence studies of middle managers have shown that proactive influence behaviors lead to certain reactions or influence outcomes on the part of the target of influence (Falbe and Yukl 1992), as depicted on the right side of Figure 1. Three possible outcomes were identified by Falbe and Yukl (1992): resistance, compliance, and commitment (reflecting a continuous measure of outcome success). The following examples from the exploratory interviews illustrate the differences between these outcomes. One of the peer executives described a case where the CIO approached him with the same proposal a number of times and each time the peer declined to go along with the proposal (i.e., displayed resistance). Another executive explained that sometimes the CIO's projects were approved by the other top managers but then the other top managers would not assist the CIO in implementation.

> People may have given support from the top level but did not support it with their personnel [i.e., subordinates]. In these cases, it is clear that it's his (the CIO's) project.

The top executives in this case had complied with the CIO's proposal, but they were not committed enough to ensure support from their subordinates.

Several studies have examined the effect of rational persuasion in peer-to-peer influence attempts (Falbe and Yukl 1992; Yukl and Tracey 1992). Although the results have been mixed,

evidence from the top executive literature indicates that rational persuasion is used frequently and effectively in the top management context (e.g., Nutt 1986). Thus,

> **Proposition 1:** Rational persuasion will be positively related to the influence outcome.

Yukl and Tracey (1992) found consultation was one of the most effective tactics. Consultation was also instrumental in gaining task commitment in the Falbe and Yukl and the Yukl and Tracey studies. In the IS arena, Earl and Feeny (1994) have argued that effective CIOs use consultative behavior to communicate key IT issues to others.

> **Proposition 2:** Consultation will be positively related to the influence outcome.

Falbe and Yukl discovered that personal appeals were intermediate in effectiveness when used on peers (i.e., led to compliance, not commitment). Yet, Yukl and Tracey found that personal appeals did lead to commitment; also, four executives in the focused interviews suggested that personal appeal was used often within the confines of the top management group. As one of the CIOs suggested, IS project approval has much to do with "personal relationships and who knows whom."

> **Proposition 3:** Personal appeal will be positively related to the influence outcome.

It is likely that ingratiation is deemed inappropriate by top executives in peer relations because it is inconsistent with the interaction styles used in their environments, and is considered socially unacceptable (Cohen and Bradford 1990; Yukl 1994). In support of this, ingratiation was not observed in our exploratory interviews.

> **Proposition 4:** Ingratiation will be negatively related to the influence outcome.

Exchange behavior has been shown to have intermediate effectiveness (Falbe and Yukl 1992),

to lead to commitment (Yukl and Tracey 1992), or to be insignificant (Keys et al. 1987) in peer situations. Some anecdotal evidence has suggested that the use of exchange by some senior managers, including IS managers, is resisted by others (e.g., Cohen and Bradford 1990; Kotter 1979). The potential for the use of exchange increases when self-interest is the motivation (e.g., Cohen and Bradford 1989). However, top executives are charged with looking out for the best interests of the organization; consequently, self-interest at the senior IS management level is often viewed negatively (Earl and Feeny 1994; Lederer and Mendelow 1988).

> **Proposition 5:** Exchange will be negatively related to the influence outcome.

Finally, studies of middle-level managers' use of coalition and pressure in peer contexts have been consistent. Falbe and Yukl found that coalition was more likely to result in resistance. Falbe and Yukl and also Yukl and Tracey found that pressure was an unsuccessful behavior. Furthermore, Nutt (1986) found that the use of pressure by top executives was the least effective behavior in strategy implementation situations. Thus,

> **Proposition 6:** Coalition will be negatively related to the influence outcome.

> **Proposition 7:** Pressure will be negatively related to the influence outcome.

Methodology ▆▆▆▆▆▆

The research model was tested using data gathered via a matched pair survey. In each organization, the CIO completed one instrument, and a peer executive completed a different one. We used the peers' assessments of CIO influence behavior and CIOs' assessments of the influence outcome to control same-source and self-report bias (Thompson et al. 1994), and to test the propositions. Measures of the model's variables are discussed below.

Influence Behaviors and Outcomes

Influence behaviors were measured using the Influence Behavior Questionnaire (IBQ) developed by Yukl and his colleagues (Yukl et al. 1992). The IBQ has demonstrated good psychometric properties in other studies. The 1997 short version of this questionnaire was obtained from the principal author. See Appendix A for example IBQ items.

A scale to measure influence outcome was created based on the definitions of commitment, compliance, and resistance given by Falbe and Yukl (1992). Commitment is evident when the target displays strong enthusiasm and special effort beyond what is expected. Compliance occurs when the target completes the request but is apathetic and makes minimal effort. Resistance is displayed when the target avoids performing the requested action by arguing, delaying, etc. Falbe and Yukl viewed outcome success as a continuous variable; however, they operationalized it categorically. In this study, influence outcome was operationalized using five items, each measured on a seven-point Likert scale, and thereby better reflecting Falbe and Yukl's original conceptualization (see Appendix A for details). A low overall score (e.g., "1") on the scale indicated resistance, a middle score (e.g., "4") indicated compliance, and a high score (e.g., "7") indicated commitment.

Control Variables

Data about the technical backgrounds of both the CIOs and non-CIO executives was gathered to explore whether differences in technical background moderated the influence behavior–outcome relationship. Technically oriented people, it has been argued, tend to deal with objects and things, are more task focused, and are less relationship centered (e.g., Hill and Collins-Eaglin 1985; Lawrence and Lorsch 1967). We expected to encounter both peers and CIOs with different technical backgrounds, so we controlled for this contingency to better explain our results. Also, previous research has examined

the impact of the organization's IT vision as a moderator of relationships in CIO impact studies (e.g., Armstrong and Sambamurthy 1999). Items were included in the present survey to capture the similarity in IT vision between the pairs of CIOs and peers to determine whether it moderated the CIO influence behavior–outcome relationship. In addition, demographic data were collected and used to determine how similar the CIOs and peers were to each other, and to demonstrate that the sample of CIOs and non-CIO executives were peers, as per Howell and Higgins (1990). We also captured data on the CIO reporting relationship, which allowed us to test whether this was a significant moderator.

Pretest

The questionnaire instruments employed in this study had not been previously used in exclusively top executive environments; as well, some new instruments were created specifically for this study. A two-stage pretest was used to test all of the instruments for nomological and content validity. The first step involved 10 academics (faculty members and Ph.D. students) who reviewed the survey as well as the research model. This led to minor item modifications and stylistic changes to the instrument. The second pretest stage involved eight CIOs and eight related peer executives, who were asked to respond to the full questionnaire and to provide additional information, such as the time it took them to complete the questionnaire.

A follow-up telephone conversation was held with each pretest respondent to better gauge their reaction to the survey and to discern whether any questions or instructions were unclear, whether the questions were meaningful and valid to them, and whether potentially important dimensions might have been omitted. Two major changes were made to the instrument as a result. The first involved the rewording of certain questions in the IBQ section of the survey (which had originally been developed for use with non-executive workers, e.g., first line supervisors). Some questions were inappropriately worded for the top

executive environment. The other change involved rewording of instructions (i.e., the words "initial attempt or attempts" were added) to better clarify how the CIO influenced the peer executive during the introductory phase of the SIS initiative.

Main Study Questionnaire Distribution

The main survey instrument was distributed to a sample of CIOs and their peers. CIO contact names were initially obtained from the Directory of Top Computer Executives database from Applied Computer Research (ACR), a database used previously by other IS researchers studying CIOs (e.g., Armstrong and Sambamurthy 1999; Segars and Grover 1998).

The CIOs were telephoned to qualify them and a peer for the study. In each organization, the context for the influence attempt(s) was to be a specific SIS project initiated by the CIO sometime during the previous 18 months, for which the CIO's goal was to obtain the commitment of the target. Following Pearce and Robinson (1987), SIS projects were defined as projects sufficiently important that they required approval from top management. Both informants had to consider the proposed project to be strategic to the organization. It was required that the CIO had a peer relationship with the other responding executive. The CIO must have also worked with the peer for at least six months (Yukl et al. 1992).

A total of 459 eligible CIOs were contacted and asked to participate; 144 agreed. Each CIO was asked to identify a specific SIS project, and to nominate a specific peer executive to also take part in the study. In all, 288 questionnaires were distributed. In each organization, one questionnaire was to be filled out by the CIO, the other by the peer executive. The CIOs and peers were verbally instructed to confine their survey responses to the introductory phase of the project. A total of 75 matched pair surveys (i.e., both the CIO and peer from the same company) were returned. Six of the matched pair surveys were deemed unusable. Thus, 69 matched-pair re-

sponses were available to use in the subsequent analysis, a number adequate for analysis using PLS (Barclay et al. 1995). This represents an effective response rate of 15 percent (Segars and Grover 1998), and reflects the challenge of obtaining survey responses from top-level executives noted in other studies (for example, Ferratt et al. [1999] reported a 10 percent response rate for a top IS executive survey, despite the fact that their study was sponsored by an IS industry association).

Follow-Up Interviews

To assist in the interpretation and explanation of the results, follow-up telephone interviews were conducted with 13 of the executives who had participated in the main study. Ten were CIOs, three were peers, but not from the same companies as the CIOs. All of these executives indicated on their surveys that they would be interested in a telephone interview.

Analyses and Results ■■■■■

Tables 3 and 4 provide key demographic statistics for the firms, CIOs, and peers. A total of 49 industries were represented in the sample. Paired t-tests and χ^2 tests were used to determine whether any significant differences existed between the CIOs and peer executives with respect to demographic characteristics. The CIOs and peers were similar in all respects (see Table 4), except company tenure. However, this difference did not appear substantive.

Reliability Analysis

Partial least squares (PLS) analysis was used to analyze the survey data (Chin and Frye 1995). Reliability analysis was conducted at the item level to determine whether any items should be discarded. This analysis was done on the data collected from the CIOs, in the case of the influence outcome construct, and from the peers, in

the case of the influence behaviors, in order to control for self-report bias (Golden 1992). Of the 33 items, 16 did not contribute to adequate levels of reliability, exhibiting loadings less than 0.7. This situation is common when new or standard scales are initially used in causal modeling (Barclay et al. 1995).

The weak items were reexamined and a number of them were subsequently eliminated. As a result, the scale for ingratiation was discarded, personal appeal was measured by a single item, and consultation, exchange, and coalition were each measured by two items (see Table 5). While three or more items per scale are preferable, other studies have utilized measures with just one or two items comprising certain scales (e.g., Ang and Straub 1998; Gefen and Straub 1997). The internal consistencies of all scales subsequently exceeded .70, a level deemed acceptable for exploratory research (Fornell and Larcker 1981).

Convergent and Discriminant Validity

The matrix of loadings and cross-loadings (see Appendix B) was examined for convergent validity: items loading strongly on the constructs they intended to measure. The loadings ranged from .713 to .967, a better result than is common in exploratory IS research (e.g., Barclay et al. 1995; Thompson et al. 1994). As well, high cross-loadings (i.e., greater than 0.5) were not observed, providing evidence of discriminant validity (Barclay et al. 1995). Additionally, Table 6 demonstrates the constructs' strong discriminant validity. A commonly accepted criterion for construct discriminant validity is that the average variance shared between a construct and its measures should be greater than the variance shared between the construct and other constructs in the model (Barclay et al. 1995). The diagonal elements are the square roots of the average variance extracted; the off-diagonal elements are the inter-construct correlations. Good discriminant validity is demonstrated because all the diagonal elements are greater than corresponding off-diagonal elements (Barclay et al. 1995).

Table 3. Responding Company Profiles		
Category	**Mean**	**Median**
1997 Revenues (in $US millions)	2,036	804
Number of Employees	4,567	2,400
Age	59 years	55 years

Note: Of the companies responding, 33% were based in the United States and 67% were based in Canada.

Table 4. Demographic Profile of Matched Pairs			
Characteristic	**Mean or % for CIOs**	**Mean or % for Peers**	**p < .05**
Age	46.91	45.71	No
Gender	86% males	91% males	No
Tenure with Company	9.78	12.20	Yes
Tenure in Current Job	4.01	3.79	No
Reporting Level	1.49	1.41	No
Member of Top Management Team	60.3%	71.0%	No
Technical Background	4.44	4.21	No

Note: Paired t-tests were used for continuous variables and χ^2 tests for categorical variables

Table 5. Reliability of Scales				
		Scale		
Construct	**Informant/ Respondent**	**Original Number of Items**	**Internal Consistency**	**Item(s) Deleted**
Rational Persuasion	Peer	4	0.848	q22
Consultation	Peer	4	0.794	q5 and q25
Personal Appeal*	Peer	4	1.000	q18, q15, and q 34
Ingratiation**	Peer	4	NA	All
Exchange	Peer	4	0.768	q20 and q36
Coalition	Peer	4	0.876	q2 and q35
Pressure	Peer	4	0.865	q33
Influence Outcome	CIO	5	0.871	q45

Notes: *Only one item used.   **Deleted due to reliability concerns.

| Table 6. Construct Correlations							
	RP	**CON**	**PA**	**EX**	**COAL**	**PR**	**IO**
Rational Persuasion	**0.810**						
Consultation	0.403	**0.812**					
Personal Appeal	0.048	0.097	**1.000**				
Exchange	0.015	0.035	0.265	**0.790**			
Coalition	0.036	-0.099	-0.137	-0.103	**0.883**		
Pressure	0.126	0.325	-0.343	0.330	-0.440	**0.826**	
Influence Outcome	0.309	-0.116	0.150	-0.306	-0.176	-0.295	**0.793**

Results

PLS was used to test the propositions (proposition 4 was not tested since no ingratiation item survived the measurement model assessment). The results revealed that 32.6 percent of the variance in influence outcome was explained by the independent constructs (see Figure 2). Table 7 provides a more complete statistical summary of the results.

Proposition 1, which focused on the relationship between rational persuasion and the influence outcome, was supported. Rational persuasion appears to have a positive impact on the influence outcome and is likely to lead to commitment. Proposition 2, concerning the relationship between consultation and influence outcome, was not supported. Proposition 3, regarding the relationship between personal appeal and influence outcome, was supported. This suggests that personal appeal may be an effective influence behavior to use in lateral influence attempts in top executive environments. However, only one item was used to measure personal appeal, so this result should be viewed cautiously.

Proposition 5, which centers on the negative relationship between exchange and the influence outcome, was also supported. The result suggests that as the use of exchange increases, the influence outcome moves toward resistance. CIOs that use this behavior are more likely to encounter resistance to the SIS projects they

promote. Thus, it appears that in relationships between CIOs and their peers (i.e., senior management environments), exchange is unsuccessful. Proposition 6, focusing on the relationship between coalition and influence outcome, was not supported. Proposition 7, the negative relationship between pressure and influence outcome, was weakly supported ($p < .10$) and should be viewed with caution.

We also tested the model to see if the results would still hold true if we just used a subsample of CIOs that were part of the top management team. CIOs that are not part of their top management team may behave differently with their peers due to differences in power, status, etc., as compared to CIOs who are top management team members (e.g., Earl and Fenny 1994; Lederer and Mendelow 1988). The overall pattern of results was the same as the full sample. Rational persuasion and personal appeal had positive impacts on the influence outcome; exchange and pressure had negative impacts. Personal appeal was significant at the .01 level. However, rational persuasion was only significant at the .10 level and exchange and pressure were not significant. While it may be that the pattern for CIOs who are part of the top management team is different from those who are not, the small sample size in this study makes it impossible to answer the question with any degree of assuredness. Additionally, the results of PLS tests used to determine the impact of the moderators were inconclusive. Both of these issues are discussed in the limitations section.

Figure 2. Results
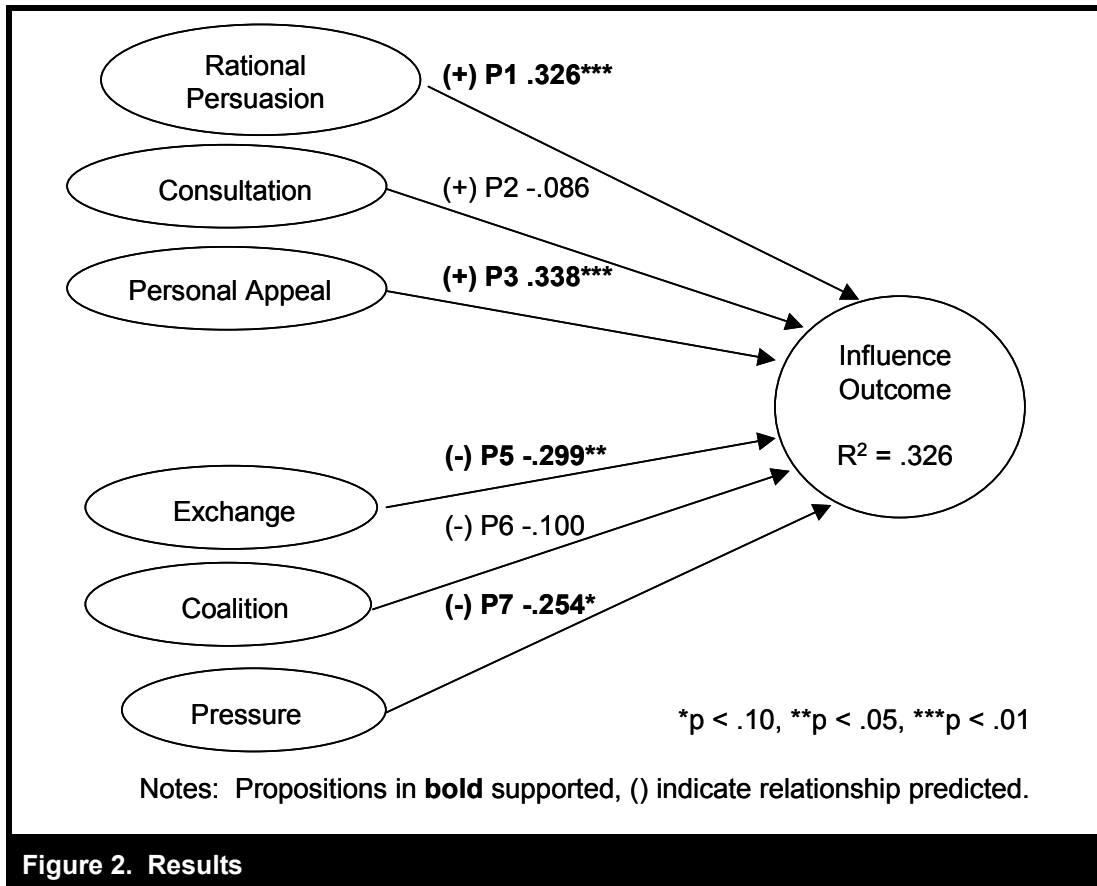
Table 7. Propositions Tests Summary		
Proposition	**Standardized Coefficient**	***t*-statistic**
P1: RP – IO	.326	3.563***
P2: CON – IO	-.086	-1.170
P3: PA – IO	.338	3.210***
P5: EX – IO	-.299	-2.060**
P6: COAL – IO	-.100	-.407
P7: PR – IO	-.254	-1.765*

*p < .10, **p < .05, ***p < .01

Discussion ▬▬▬▬▬▬

Consistency with Prior Research

This paper has demonstrated that of the influence behaviors at the disposal of CIOs, not all are equally effective during the introductory phase of a new SIS project. For instance, rational persuasion appears to have a positive impact on the influence outcome and is likely to lead to commitment. The positive relationship between rational persuasion and commitment found in this study compares favorably with other studies using managers at three different levels in the organizational hierarchy (Yukl and Tracey 1992). This result is also consistent with anecdotal literature concerning top executive behavior (Nutt 1986). Thus, CIOs are encouraged to "do their homework" when proposing new, SIS proposals so they can provide a compelling, rationally argued case for how these proposals can benefit the organization.

Although weakly supported, the result for proposition 7 is consistent with middle-level and senior management peer studies. In their study of influence attempts directed at peers, Falbe and Yukl (1992) and Yukl and Tracey (1992) found that pressure was unsuccessful. Research on lateral influence behaviors of CIOs and top managers also reveals that pressure is an unsuccessful tactic (e.g., Earl and Feeney 1994; Tinnirello 1996). As one executive explained, "the relationship aspect of the influence attempt is most important and pressure works against the trust that has been developed in that relationship."

The implication for CIOs is that pressure appears to lead to an unsuccessful outcome when influencing peers about SIS projects.

The proposition which dealt with the relationship between the use of coalition tactics and the influence outcome was not supported. This result is consistent with the statistically insignificant findings from Yukl and Tracey's study. A larger sample size may have increased the likelihood of detecting a significant relationship between coalition and the influence outcome, although the power analysis suggests otherwise. Thus, CIOs should use coalition tactics with caution.

Challenges to Prior Work

Proposition 3, concerning the relationship between personal appeal and the influence outcome, was also supported. The Falbe and Yukl and Yukl and Tracey studies found that personal appeals were either intermediate in effectiveness (led to compliance) or led to commitment when used on peers. The inconsistent results between these studies may have to do with the fact that the Falbe and Yukl study used MBA students and the Yukl and Tracey study used a mixed sample of informants from three different levels in the organizations' hierarchies, including top executives. This suggests that personal appeal may operate differently in the top executive environment.

This is consistent with the findings from other data collected for this study. For instance, a number of executives in the focused interviews suggested that personal appeal was often used successfully within the confines of the top management group. As the interviews demonstrated, SIS project approval has much to do with networks of trust: who knows whom. The post-survey follow-up interviews also suggested that trust was a key factor underlying the success of personal appeal behaviors. If the CIO had a good track record with IS projects and had established a relationship of trust with a peer, then it was likely that the peer would be swayed by personal appeal behaviors. As one of the executives remarked, "a lot of people do not understand much about technology; it costs a lot of money, and they want someone they can trust."

It was demonstrated that the use of exchange behaviors is generally unsuccessful when utilized by CIOs in top management–peer interactions concerning SIS projects. Use of exchange often results in resistance in such cases. This finding is inconsistent with some of the influence behavior studies conducted with middle-level managers,

where it was found that exchange was effective in gaining compliance or commitment (e.g., Falbe and Yukl 1992; Yukl and Tracey 1992). However, anecdotal evidence has suggested that some top managers, including IS managers, encounter resistance when they use this type of behavior (e.g., Cohen and Bradford 1990; Kotter 1979). Thus, it appears that, in relationships between CIOs and their peers in a senior management environment, exchange is unsuccessful. Further research is needed to confirm this difference since there is some evidence that exchange can be used successfully to secure business executives' funding of IT infrastructure (Ross and Beath 2002). Future research is also required to discover if the impact of exchange behavior is consistent across top executives in other functional areas, indicating differences between top and middle-level managers, or if it is only true for CIOs, indicating differences between CIOs and their peers.

Proposition 2, concerning the relationship between the use of consultation and the influence outcome, was not supported. This is a surprising result, since the IS management literature clearly indicates the importance of consultation (e.g., in the form of user involvement). Reich and Benbasat (1996) and others have argued that effective CIOs exhibit consultative behavior to communicate key IT issues to others (Earl 1993; Earl and Feeny 1994; Lederer and Mendelow 1988). In addition, other peer influence literature suggests that consultation leads to commitment (Falbe and Yukl 1992; Yukl and Tracey 1992). Our initial fieldwork also observed consultation being used for successful IS projects. Effective CIO influence behaviors included personal consultation with the targets of influence. One possible explanation for this result is that the items associated with consultation, based upon Yukl and Falbe's (1990) original instrument, did not adequately reflect the consultation behaviors of CIOs (nor did the initial interviews bring this to our attention). Improvements to the current survey questions, including additional interviews with top executives to refine what is meant by consultation in their environment, is clearly necessary for future research in this area.

Future Model Development

Since the research model accounts for only 32.6 percent of the variance in the dependent variable, there is room to enhance its explanatory power. Clearly, numerous factors such as other sources of CIO power not explicitly examined (control over scarce resources, where the CIO resides in the social network, their level of managerial expertise, etc.) and the peer's assessment of these sources of power, likely have a bearing on the outcome (Earl and Feeny 1994; Tedeschi et al. 1972; Yukl 1994). Similarly, the study reported in this paper could be replicated with a sample of CIOs that are all part of the top management team to see if the pattern of relationships still hold as well as to examine the impact on the dependent variable. These factors reveal opportunities for future research to achieve a fuller explanation of the variation in the influence outcome variable.

Good working relationships with peers are a necessary condition for the success of IT executives' (Earl 1993; Henderson 1990; Keen 1991; Stephens et al. 1992). This research has revealed that rational persuasion and personal appeal influence behaviors are likely to be most effective when seeking commitment to SIS projects in cases where the CIO has an established relationship with a peer. Furthermore, CIOs have been cautioned that they should communicate with other executives in non-technical language, and that they should characterize SIS projects as initiatives that assist the business, not as IT projects (Earl and Feeny 1994; Feeny et al. 1992; Stephens et al. 1992). Engaging in the preferred language of other executives demonstrates CIO sensitivity to their peers' concerns and should play a role in the CIO's ability to exert influence effectively. Thus, it is important for future research to more fully examine what constitutes a good working relationship between a CIO and a peer, as well as predicting its impact on the effectiveness of influence behaviors.

The ability to package SIS proposals, with the use of rational persuasion, as win–win initiatives for the peer, the CIO, and the business may significantly impact the outcome of the influence

attempt. A CIO has a greater likelihood of success when appropriate influence behaviors are used in conjunction with SIS project proposals consistent with the strategic orientation of the firm. Conversely, if peers view SIS projects as CIOs looking after their own self-interest, they will likely reject them (Earl and Feeny 1994; Lederer and Mendelow 1988). Future research could examine these compelling relationships.

Additionally, the ability of the CIO to understand the peer executive's organizational culture and context—to see things through his/her eyes—is likely to be an important contributor to the outcome of an influence attempt by the CIO. This is similar to the role of shared understanding, shown in other studies to be important for CIO effectiveness (Earl 1993; Feeny et al. 1992; Reich and Benbasat 1996).

Research in the influence area should examine the impact of other contextual factors on a peer's acceptance of an SIS project. For example, the nature of competition in the industry, the long-term and short-term financial stability of the organization, other projects that compete for resources, socially unacceptable behaviors, and consideration of the target's personal style can be important determinants of a peer's decision to reject or commit to an SIS project (Dutton et al. 2001; Hambrick and Mason 1984; Lederer and Mendelow 1988, Yukl 1994).

Limitations

The study demonstrated the reliability and validity of a new scale associated with the influence outcome construct. However, more work needs to be done to refine the influence measures and the accompanying instructions. The ingratiation scale did not demonstrate adequate psychometric properties and had to be dropped from the analysis. A single item was used to measure personal appeal, and two items were used to measure exchange and coalition behaviors. One possible explanation for the lack of support for the consultation proposition is that the items associated with consultation did not adequately reflect the consul-

tation behaviors of CIOs. Therefore, future researchers should try to create more robust measures for these constructs and additional ones that may be relevant. For instance, although the IBQ ought to be consulted since it provides a taxonomy of commonly used influence behaviors and associated descriptions, we suggest that an instrument designed to specifically measure CIO and other top management influence behaviors should be developed. We believe that the best starting point would be to follow Churchill's (1979) suggestions on how to create solid measures. CIOs and other top executives should also be heavily involved in the process of developing these measures for tasks such as face validity determination and pretests.

As for the questionnaire instructions, the respondents may have misinterpreted the phrase *initial influence attempt or attempts*. In spite of the directions to focus on the introductory phase of the project, some might have responded with respect to later influence attempts. Although none of the participants indicated any confusion about this, future researchers should strive to refine the language associated with the influence behavior scales and instructions.

As mentioned earlier, inconclusive results were obtained after the control variables were assessed. For example, the extent to which the CIO and peer executive had similar or different technical backgrounds was examined as a possible moderating influence. However, the split data set analysis (for details of the technique used, see Keil et al. 2000) resulted in instability in the PLS model due to insufficient data and led to inconclusive outcomes. The same analytical approach was used to analyze the moderating effect of similarities and differences in IT vision, and whether the CIO reported to the CEO or not, on the influence behavior–outcome relationship. The results of these analyses were also inconclusive. Clearly, a larger sample size is required for analyses of these moderators in future research.

This study was also limited to examining initial influence attempts, and the survey did not allow for analysis of the impact of influence behavior

combinations (e.g., Falbe and Yukl 1992). Studies of CIO influence behaviors that include follow-up attempts and influence behavior combinations may shed additional light on our findings.

Finally, consistent with some IT literature (e.g. Earl and Feeny 1994; Lederer and Mendelow 1988; Ross and Feeny 2000), this study only took into account situations where the CIO initiates an SIS. This is a limitation to the generalizability of the results. Clearly there are other members of the top management team that initiate and sponsor SIS proposals (e.g., Rockart 1988; Ross and Beath 2002). Future research could, therefore, examine the role and influence of the CIO in these circumstances. For instance, how does the CIO effectively use his or her influence behaviors when others initiate SISs?

Conclusion ■■■■■■■■

Over the past two decades, the role of the CIO has progressed from the new kid on the block to respected and equal partner in many top management teams. CIOs today play a key role in managing issues of strategic importance to their organizations (Maruca 2000; Ross and Feeny 2000). They are commonly faced with promoting SIS projects whose focus is in functional areas outside of their direct control. Skill at exercising influence, particularly lateral influence, can be a major contributor to their success in doing this, as well as generally indicating that they are competent executives and deserve a place at the table. This study used interviews and a survey of 69 CIOs, together with peer executives, to better understand the patterns of influence behavior these CIOs utilize, and the relationship between their influence behaviors and the extent to which they are able to create peer commitment to SIS projects.

Acknowledgements

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Appendix A

Key Segments of the Research Questionnaire:
Peer Survey Questions ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

1. Description of Intent

The purpose of this questionnaire is to learn how Chief Information Officers (CIOs) try to influence others in work organizations. For each question in this section, you are requested to provide responses that describe your CIO's use of a tactic in his or her ***initial attempt or attempts*** to gain your support for the ***strategic information systems project*** named:

2. Examples of Influence Behavior Questions

Note: The authors of the IBQ have kindly given permission to divulge the first question from each influence behavior category.

Please describe the extent to which the **CIO** uses each type of behavior to influence you by selecting one of the response choices listed below. Try to avoid letting your general impressions of this person bias your answers. If a behavior is not relevant for your situation or you are unsure whether the person has used it with you, select the first response (#1).

1. **I can't remember him/her ever using this tactic with me.**
2. **He/she very seldom uses this tactic with me.**
3. **He/she occasionally uses this tactic with me.**
4. **He/she uses this tactic moderately often with me.**
5. **He/she uses this tactic very often with me.**

The CIO...	for the project listed above
1. Explained the reasons for a proposed project in a clear and convincing way.	_____
2. Brought somebody along to support him/her when meeting with you to propose a new project.	_____
3. Offered to do something for you in return for your support of a proposed project.	_____
4. Told you that his/her proposed project is very tentative and invites suggestions about how to improve it.	_____
5. Insisted in an assertive way that you must support a proposed project.	_____
6. Complimented you on past accomplishments when asking you to support another proposed project.	_____
7. Asked you as a personal favor to support a proposed project.	_____

3.   Influence Outcome Items

	strongly disagree			neither agree nor disagree			strongly agree
29. I was enthusiastic about the project.	1	2	3	4	5	6	7
30. I tried to delay the project.	1	2	3	4	5	6	7
31. I persisted in obtaining support for the project.	1	2	3	4	5	6	7
32. I disapproved of the project in discussions with other top managers.	1	2	3	4	5	6	7
33. I exercised initiative in promoting the project.	1	2	3	4	5	6	7

Appendix B

Matrix of Loadings and Cross-Loadings

Item	Rational	Consult	Personal	Ex.	Coal.	Press.	Infl. Out
RP1	**-0.723**	-0.300	-0.040	0.175	-0.033	-0.020	0.004
RP2	**-0.713**	-0.381	-0.153	0.085	-0.118	-0.029	0.122
RP3	**-0.967**	-0.356	-0.003	-0.052	-0.002	-0.145	0.337
CON1	-0.329	**-0.875**	-0.129	-0.082	0.070	-0.291	0.108
CON2	-0.332	**-0.744**	-0.012	0.044	0.095	-0.234	0.078
PA1	0.048	0.097	**1.000**	0.265	-0.137	0.343	0.150
EX1	-0.001	0.196	0.357	**0.800**	0.000	0.347	-0.247
EX2	0.026	-0.148	0.055	**0.779**	-0.166	0.171	-0.236
COAL1	0.008	-0.006	0.108	0.116	**-0.802**	0.347	-0.092
COAL2	-0.053	0.135	0.132	0.082	**-0.958**	0.424	-0.192
PR1	0.205	0.476	0.321	0.204	-0.360	**0.784**	-0.192
PR2	0.122	0.282	0.376	0.247	-0.463	**0.847**	-0.209
PR3	0.028	0.129	0.197	0.337	-0.299	**0.845**	-0.302
IO1	-0.192	-0.012	0.023	-0.202	0.253	-0.317	**0.790**
IO2	-0.212	-0.121	0.142	-0.243	-0.002	-0.273	**0.814**
IO3	0.240	0.025	-0.042	0.346	-0.193	0.163	**0.725**
IO4	-0.320	-0.192	0.247	-0.184	0.121	-0.194	**0.839**