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Abstract:

A key enabler of environmental projects is the ability of the project champion to gain commitment to the project from other stakeholders in his or her organization. This paper develops a model of commitment-gaining success that is based on intra-organizational influence theory. The model also includes the project payback, customer pressure, government regulation, top management support and the project champion's position in the organizational hierarchy. The model was tested using survey data from 241 environmental professionals describing their attempts to gain the buy-in of purchasing managers, operations managers, industrial engineers and others for environmental projects. The results (obtained from hierarchical regression analysis) show that intra-organizational commitment is positively associated with the project champion's influence behavior—in particular, the champion's use of three influence tactics (inspirational appeals, consultation and rational persuasion) and avoidance of a fourth tactic (ingratiation). Commitment is also positively associated with project payback and with top management support for the environment and negatively associated with environmental regulation. The paper contributes to the OM knowledge base of environmental project implementation by bringing new theory to bear on the topic, by focusing on individual-level, rather than organization-level, variables and by taking a confirmatory, large sample approach which complements extant exploratory research. In addition, the paper contributes to the OM field by evaluating various antecedents to cross-functional integration. The results also provide specific guidance to those who champion environmental projects within their companies.

1. Introduction

Research using self reports and archival data demonstrates that environmental management can lead to better environmental performance (Klassen and Whybark, 1999; Zhu and Sarkis, 2004) and firm performance at both the operations and financial levels (Klassen and McLaughlin, 1996; Klassen and Whybark, 1999; Carter, Kale and Grimm, 2000; Pil and Rothenberg, 2003) This is due in part to cost savings associated with reduced waste (Rosenau, Twede, Mazzeo and Singh, 1996; Mollenkopf, Closs, Twede, Lee and Burgess, 2005), reduced discharges (Zhu and Sarkis, 2004), shorter lead times, and better product quality (Montabon, Melnyk, Sroufe and Calantone, 2000; Hanson, Melnyk and Calantone, 2004), along with an enhanced reputation among suppliers and customers (Ellen, Webb and Mohr, 2006), current

employees (Kassinis and Vafeas, 2003), potential employees (Capaldi, 2005), and shareholders (Klassen and McLaughlin, 1996). However, in many organizations there is a gap between the desire to be environmentally responsible and the degree to which environmental management is actually practiced—i.e., in many companies, high level policy and values statements are in place, but corresponding operations and supply chain-level programs and practices have not manifested themselves widely (Preuss, 2001; Institute for Supply Management, 2007). One reason for this gap is that, while organizations often attempt environmental initiatives, the programs are not always successfully implemented (Carter and Dresner, 2001). This suggests a need for research on factors that contribute to successful implementation of environmental projects.

Since environmental initiatives frequently require changes to business practices and reward systems, these projects often encounter resistance by personnel in various functional areas across the organization (Drumwright, 1994; Carter and Dresner, 2001; Carter, Ellram and Tate, 2007). This is particularly significant in light of the fact that many environmental initiatives are begun at the grass roots or middle levels of the organization—by individuals who lack the positional power to simply force others to "get on board" (Drumwright, 1994; Adams, 2004; Friend, 2007). Numerous case studies have found that a key to overcoming intra-organizational resistance and other barriers is the ability of a project champion to gain the *buy-in* or *commitment* of others in the company, particularly across functional/departmental boundaries (Drumwright, 1994; Handfield, Walton, Seegers and Melnyk, 1997; Crane, 2000; Carter and Jennings, 2004; Carter et al., 2007; Willard, 2008). For example, a conclusion of one study (Handfield et al., 1997, p. 311) is "The common thread within all of the companies studied is that environmental management cannot succeed when the responsibility is delegated to specialists." Rather a variety of functional areas must participate (Handfield et al., 1997). In fact, how one gains the

commitment of others to environmental projects, especially when those others do not consider the environment as "part of my job," is one of five future research priorities identified by the Handfield et al. (1997) study. In spite of this, the operations management (OM) and supply chain fields have produced little research, especially confirmatory research, on the role of the individual environmental management champion in bringing about change. The present paper helps to fill this gap by asking the research question, *what determines the ability of project advocates to gain the cross-functional commitment of other stakeholders in their organization for environmental management projects?* In this context, examples of environmental management projects include changing the materials used in a product (e.g., from virgin to recycled content inputs) or used in running the business (e.g., replacing solvents that contain high volatile organic compounds); using less of a particular input (e.g., reducing energy consumption through purchasing Energy Star compliant computers); and implementing new facilities management practices (Handfield et al., 1997; Melnyk, Sroufe and Calantone, 2003; Montabon, Sroufe and Narasimhan, 2007; Tate, Ellram, Mollenkopf and Petersen, 2007).

Only a few existing studies address this research question. And, those that do employ an exploratory approach (Drumwright, 1994; Carter and Dresner, 2001). Our research extends and complements these works by using a large sample, deductive approach and by bringing existing, well-validated theory to bear on the problem. In particular, we draw on intra-organizational influence theory (Kipnis, Schmidt and Wilkinson, 1980; Yukl and Falbe, 1990), which is described in the next section.

Within OM, the topic of gaining intra-organizational commitment, especially in a cross-functional context, has implications well beyond the domain of environmental projects. Management commitment is a recurring factor in OM literature dealing with a wide variety of

project and process implementation efforts—for example, Total Quality Management implementation (Flynn, Schroeder and Sakakibara, 1994; Samson and Terziovski, 1999), JIT purchasing initiatives (Kaynak and Hartley, 2006), new product development success (Swink, 1999; Swink, Talluri and Pandejpong, 2006), MRP/ERP implementation (Petroni, 2002; Stratman and Roth, 2002) and capital project execution (Scott-Young and Samson, 2008). Lack of management commitment is a significant barrier to healthcare patient safety initiatives (McFadden, Stock and Gowen, 2006) and to information technology implementation success in manufacturing and services (Sohal, Moss and Ng, 2001). Similarly, lateral or cross-functional cooperation is associated with improvements in quality (Flynn, Schroeder and Sakakibara, 1995), flexibility (Alder, Goldoftas and Levine, 1999) and project management success (Pinto, Pinto and Prescott, 1993). Inter-functional integration leads to numerous positive outcomes, including manufacturing performance (Cua, McKone and Schroeder, 2001; Sawhney and Piper, 2002), financial performance (O'Leary-Kelly and Flores, 2002) and employee morale (Hausman, Montgomery and Roth, 2002). However, in spite of their importance, the OM literature lacks investigations into the factors that *lead to* management commitment and inter-functional integration. By examining antecedents of cross-functional buy-in, this study plays an important part in filling this gap.

The next section reviews the literature and explains the research model. As we then describe, the model is tested using survey data collected from environmental professionals who have attempted to gain the commitment of another stakeholder within their organization for an environmental project. Finally, we discuss the study's results and contributions.

2. Literature review and research model

2.1. Antecedents of environmental management

Existing studies have identified a number of factors that explain differences from company to company in the degree to which various forms of environmental management are practiced. Such factors include top management support (Drumwright, 1994; Carter and Jennings, 2004; Pagell and Wu, 2009), middle management support (Carter, Ellram, and Ready, 1998), firm size (Bowen, 2002), regulatory pressure (Porter and van der Linde, 1995; Green, Morton and New, 1996; Min and Galle, 2001; Preuss, 2001), customer influence (Drumwright, 1994; Green et al., 1996; Carter et al., 1998; Min and Galle, 2001; Carter, 2004), and the competitive environment (Pagell, Krumwiede and Sheu, 2007). One important commonality of these studies is that most of the explanatory variables are *organization-level* and are beyond the immediate control of the individual project advocate. As a result, existing studies have yielded significant insight into the organization- and industry-level factors that explain variation from company to company in the degree to which environmental management is practiced; however, the existing confirmatory literature offers much less guidance to the individual who might ask, "What should *I* do in order to move environmental initiatives forward at my company? What actions should I engage in or avoid?" Thus our model focuses at this level—i.e., on whether individual behaviors make a difference and if so what are some individual behaviors that are important? This level of analysis is relevant because, as noted above, many environmental initiatives are championed by individuals at mid and lower levels of the organizational hierarchy—i.e., by individuals who lack the positional power to mandate others' compliance and who therefore typically rely on less formal mechanisms to influence others (Drumwright, 1994; Carter and Dresner, 2001; Carter et al., 2007).

2.2. Commitment

As noted in the introduction, existing research has found that the ability of the project advocate to gain the commitment of others is a key to successfully implementing environmental management projects. Therefore commitment is the dependent variable in the present study. *Commitment* to a project exists when individuals internalize or become sympathetic to a project's goals (Mowday, Steers and Porter, 1979). Commitment leads to persistence and extra effort in bringing a project to fruition, especially when the project faces barriers (Mowday et al., 1979; Becker, Billings, Eveleth and Gilbert, 1996).

2.3. Theory of intra-organizational influence

Noting the importance of commitment, a number of researchers have sought to understand behaviors by which individuals influence other individuals (subordinates, superiors, peers) within their organizations in order to gain their commitment to various projects, objectives, etc. Scholars have conceptualized the intra-organizational influence process as consisting of an *agent* who seeks to influence a *target* individual in a single or multiple-incident *influence attempt* using one or more *influence tactics* in order to produce some *outcome* (Table 1). Researchers have proposed and validated numerous individual tactics and taxonomies of tactics that individuals use to influence others in the workplace. The two dominant taxonomies appear in Table 2. Subsequently, studies have examined the relative frequency of use of various tactics, the variables that influence agents' choice of tactics, and the outcomes. Table 3 summarizes this work. The theory and the empirical research in Table 3 generally posit that outcomes (such as target commitment and others' opinions of the agent) occur when agents use tactics that are universally effective or that are effective for the particular situation—e.g., tactics that are well-suited to the type of issue for which the target is advocating. For example, Falbe

and Yukl (1992) find that, in influence attempts spanning a wide variety of issues, inspirational appeals and consultation, on average lead to targets' commitment, while pressure, personal appeals and coalition lead to resistance. Focusing narrowly on information technology projects, Enns, Huff and Higgins (2005) find that rational persuasion and personal appeals are positively associated with gaining others' commitment. Rao, Schmidt and Murray (1995) find that, while individuals believe that ingratiation earns them high appraisals from superiors, it is use of coalition that actually earns them higher evaluations.

Insert Tables 1-3 About Here

Our hypotheses apply intra-organizational influence theory to the process of gaining commitment to environmental management projects. As shown in Table 1, when viewed through this theoretical lens, the project champion can be conceptualized as the agent, who tries to influence someone else (the target) regarding an environmental project. The outcome of interest is the target's level of commitment to the project. The unit of analysis in our model is the influence attempt. The key tenet of intra-organizational influence theory is that the influence behavior of an agent can affect the attitude of the target toward an issue. Influence behavior can be thought of as the degree to which the agent uses or avoids various influence tactics. Our first hypothesis applies this notion to environmental management projects.

H1: Agent usage of influence tactics explains a significant amount of variation in target commitment to environmental management projects.

H1 considers whether influence behavior in general makes a difference—i.e., that a representative group of influence tactics considered together can explain a significant amount of variation in target commitment. If H1 is supported, the next question becomes, which tactics should agents utilize and avoid? We address this issue in the following section.

2.4 Influence Tactics

As Moss, Barbuto, Matkin and Chin (2005) observe, there are numerous taxonomies of intra-organizational influence tactics. The two that have received significant recognition in the broader scholarly community are by Kipnis and colleagues and Yukl and colleagues (Table 2). However, neither of these taxonomies can be considered dominant—i.e., both have been drawn upon extensively by other researchers, as summarized in Table 3. As can be seen from looking across the rows in Table 3, subsequent studies which have not been conducted by the taxonomy-developers (i.e., studies not authored by either Kipnis or Yukl themselves) generally have not done wholesale adoptions of either the Kipnis or Yukl taxonomies. Instead the dominant approach in most studies has been to include a smaller subset of tactics. Researchers have included/excluded particular tactics for theoretical reasons (e.g., some tactics can be expected to have particularly interesting effects in certain domains, but less so in other domains) and for reasons of parsimony (i.e., especially if a research goal is to examine other independent variables along with influence tactics, then including a large number of influence tactics in the model becomes unwieldy in terms of sample size requirements and other methodological considerations). Along this same line, some scholars (e.g., Blickle, 2003; Clarke and Ward, 2006) have also grouped tactics into three categories, "reason-based," "hard" or "soft," and have then examined one or two representative tactics from each group (see column 2 of Table 2 for the dominant groupings).

Likewise, for reasons of theory and parsimony, we chose a subset of tactics from the taxonomies suggested by Yukl and Kipnis. Since there is little consensus in the literature as to which tactics universally merit inclusion and exclusion, we used three criteria to determine the particular tactics to include in our model:

- Following the precedent discussed above (e.g., Blickle, 2003; Clarke and Ward, 2006), we include representative tactics from each of the three fundamental types (reason-based, hard and soft tactics). As can be seen from the first two columns of Table 4, our model includes rational persuasion, plus two hard tactics and two soft tactics.
- It makes sense to investigate the efficacy of tactics that individuals actually use. Therefore, all else being equal, we examine tactics that existing studies show are the most frequently employed, rather than seldom employed (column 3 of Table 4). Consultation, ingratiation and inspirational appeals are the most frequently used soft tactics. Coalition is the most frequently used hard tactic.
- However, we also considered the degree to which the existing sustainability literature and influence literature suggest the tactic is of interest *in the environmental area per se* (i.e., when there is something about the tactic that might make it particularly effective or ineffective when it comes to environmental issues, as opposed to other types of issues). As we explain below, legitimating and inspirational appeals are two such tactics.

In the remainder of this section, we discuss each of these tactics; we further explain the reasons for their inclusion in the model; and we present the hypotheses.

Insert Table 4 About Here

Rational persuasion entails using reason along with factual evidence to link an issue to business goals (Kipnis et al., 1980; Yukl and Falbe, 1990). Along with being the most extensively studied influence tactic (Table 3), rational persuasion is the most frequently used influence tactic (Table 4). Empirical studies consistently find a link between rational persuasion and target commitment (gray area of Table 3). This may be because rational persuasion fits the rational bureaucratic mold which may enhance targets' overall perceptions of the competence and effectiveness of agents who use the tactic (Jones and Pittman, 1982). Arguing that an initiative increases financial performance or other objectives is a highly effective way to "sell" others on the importance of the issue (Dutton, Ashford, O'Neill and Lawrence, 2001). Thus we predict:

> **H2a:** Use of *rational persuasion* by agents is positively associated with targets' commitment to environmental management projects.

Hard tactics rely on authority and often involve assertiveness and even intimidation or manipulation (Kipnis and Schmidt, 1985; Falbe and Yukl, 1992). Two such tactics are *coalition* and *legitimating*. Coalition is the most frequently used hard tactic (Table 4). Coalition refers to marshalling support for a project and then using that support as a lever with the target (Kipnis et al., 1980; Yukl, Lepsinger and Lucia, 1992). Coalition makes the target perceive that the balance of power is in the agent's favor, whether or not this is really the case, thus making the target feel "ganged up on," forced, or even bullied into performing a behavior. Thus the influence literature (e.g., Yukl and Falbe 1992) states that targets who are approached in this manner are unlikely to give their commitment to the issue they are presented with (Blickle, 2003). While empirical results are more mixed (Table 3), we follow the conceptual arguments in the literature and hypothesize:

> **H2b:** Use of *coalition* by agents is negatively associated with targets' commitment to environmental management projects.

The second hard tactic--legitimating--refers to appealing to sources of legitimate power, such as one's job position, policies, rules, etc. (Kipnis et al., 1980; Yukl et al., 1992). Legitimating is particularly worthy of investigation in the environmental arena because government regulations (e.g., EPA regulations, RoHS, REACH) place numerous environment-related requirements and constraints on most firms. More recently, industry codes of conduct and major customers' codes of supplier conduct have also come to motivate or guide many environmental initiatives of the firm. Thus we would expect champions of environmental projects to make liberal use of legitimating by appealing to these regulations, codes, etc.; and we might even expect these efforts to be effective. However, as a hard tactic—one that is based on potential sanctions for non-compliance—the influence literature predicts that legitimating will

not be effective—i.e., it will result in resistance (e.g., Yukl and Tracey, 1992). Legitimating is one of the least researched influence tactics, but its high relevance to the environmental area makes it particularly important to investigate in this study. In keeping with the influence literature, we hypothesize:

> **H2c:** Use of *legitimating* by agents is negatively associated with targets' commitment to environmental management projects.

Soft tactics rely on "personal power and power sharing" (Falbe and Yukl, 1992, p. 644). Soft tactics include inspirational appeals, consultation, and ingratiation. Inspirational appeals petition a target's values, aspirations, and emotions. It seems likely that appeals that demonstrate alignment between a project and a target's own aspirations and values will result in internalization of the project's goals by that target. Per the gray portion of Table 3, studies investigating inspirational appeals generally show that this tactic is positively associated with target commitment. Based on the conceptual reasoning and extant empirical results, we hypothesize that:

> **H2d:** Use of *inspirational appeals* by agents is positively associated with targets' commitment to environmental management projects.

Inspirational appeals are an especially interesting tactic when it comes to implementation of environmental projects. There is case study (Crane, 2000) and anecdotal (Kranhold, 2007) evidence that when advocating for environmental initiatives, individuals within organizations typically avoid values-based appeals. This may be because this tactic is ineffective for environmental issues, or, alternatively, it may be the case that inspirational appeals are effective and thus that avoidance of the tactic is misguided. Our study presents the opportunity to shed light on this question.

Allowing others to participate in decision-making has been shown to increase decision quality and contribute to the job satisfaction of those who participate (Leana, Locke, Schweiger and Cotton, 1990). Soliciting others' input regarding a change increases their acceptance of the change initiative and contributes to a positive attitude toward the change (Ives and Olson, 1984; Hartwick and Barki, 1994). Based on this reasoning we expect to find:

> **H2e:** Use of *consultation* by agents is positively associated with targets' commitment to environmental management projects.

Ingratiation enhances a target's perceptions of an agent's likeability and competence (Gordon, 1996). Use of the tactic is linked to various positive career outcomes for the agent, such as higher salary and greater promotability (Kumar and Beyerlein, 1991; Westphal, 1998; Westphal and Stern, 2006). Ingratiation tends to instill a sense of indebtedness in the target as well as a sense of obligation to reciprocate with some kind of favor (Vonk, 1998; Vonk, 2002). However, the evidence suggests that the positive affect that ingratiation may engender regarding the agent does not translate to a more positive attitude about issues that the agent is advocating (the environmental project in the present case) (Falbe and Yukl, 1992; Yukl and Tracey, 1992; Yukl, Kim and Falbe, 1996). Thus we predict that there will be neither a significant positive nor negative effect for ingratiation. However, it is necessary to include ingratiation in the model because existing research shows that the tactic is frequently used and thus important to understand in the present context.

> **H2f:** Use of *ingratiation* by agents is *not* significantly associated with targets' commitment to environmental management projects.

2.5. Control variables

It is important to control for factors that the literature suggests might also affect commitment. Most organizations function, at least nominally, on rational bureaucratic principles

(Weber, 1964). Therefore, all else being equal, commitment may be greater when the influence attempt is downward (directed at subordinates) and less when upward (directed at superiors), although empirical evidence suggests that this is not always the case (Yukl et al., 1996). To control for the possibility that the direction of the influence attempt (upward, lateral, downward) has an effect, we included this variable in the research model.

Business functions (i.e., marketing, engineering, procurement, operations) differ in characteristics such as temporal orientation (long term vs. short term), organizational structure, and reward systems (Lawrence and Lorsch, 1967). These different functional areas within the firm often maintain distinct "thought worlds" and sub-cultures (Frankwick, Ward, Hutt and Reingen, 1994). Individuals from some business functions might be more/less likely than others to embrace environmental endeavors, especially since many environmental projects have payoffs that are long term and/or hard to measure. In other words, a target's functional affiliation may affect the degree to which s/he commits to an environmental project when support or participation is requested by a project champion. Several studies have suggested that purchasing may be resistant to various environmental initiatives (Min and Galle, 1997; Walton, Handfield and Melnyk, 1998). In fact, in one study of environmental procurement (Drumwright, 1994), none of the programs were actually initiated from within purchasing, and substantial resistance by purchasing personnel was observed. Therefore, we also control for whether the influence attempt target's functional affiliation (i.e., their department) was purchasing.

A number of contextual factors may affect the degree to which firms engage in environmental programs. We control for the following three factors by including them in the model: *government regulation* (Handfield et al., 1997; Min and Galle, 2001; Preuss, 2001; Carter and Jennings, 2004; Kassinis and Vafeas, 2006), *customer pressure* (Drumwright, 1994; Green et

al., 1996; Carter and Carter, 1998; Walton et al., 1998; Min and Galle, 2001; Carter and Jennings, 2004) and *top management support* (Drumwright, 1994; Carter, 2004).

The model also includes the financial attractiveness of the project (at the time of the influence attempt). In other words, all else being equal the greater its financial attractiveness, the more likely it is that others will support the project (Min and Galle, 2001).

3. Methodology

The researchers constructed a web-based survey to test the study's hypotheses. Whenever possible the authors used existing validated scales to operationalize the study's constructs (Churchill, 1979; Flynn, Sakakibara, Schroeder, Bates and Flynn, 1990). The commitment scale items are adapted from the well-known Occupational Commitment Questionnaire (OCQ) (Mowday et al., 1979). Government regulation was measured using scales developed by Carter and Carter (1998). The customer pressure and top management support scales are from Carter and Jennings (2004). Measures of three of the six influence tactics (rational persuasion, ingratiation and coalition) were adapted from the work of Kipnis et al. (1980) and subsequent refinements of these scales by Schriesheim and Hinkin (1990).

To develop the remaining three influence tactics scales, we drew from the intra-organizational influence literature, other literature, and from practitioner interviews on implementing environmental management. Scales were reviewed by practitioner experts from both environmental health & safety and supply chain management (Heeler and Ray, 1972; Churchill, 1979; DeVellis, 1991; Dunn, Seaker and Waller, 1994).

For the influence tactics and commitment scales, a pilot survey was completed by seventy-five undergraduate and MBA students with substantial work experience (a median of eight years). Subjects were instructed to answer the questions based on "a recent time when you

tried to influence someone with whom you work"-- an approach which has been used successfully in other studies (e.g., Kipnis et al., 1980; Falbe and Yukl, 1992; Yukl et al., 1996). Based on reliability and exploratory factor analysis of the pilot data, items were deleted, reworded or added to improve the measurement validity of the scales.

The web-based survey was tested for robustness (Dillman, 2000). The researchers filled out the survey repeatedly in order to verify that the data entered matched the data recorded and that logical branching functioned as intended.

3.1. Data collection

As described in section 2.3, the unit of analysis in our model is the influence attempt—i.e., one or more contacts in which a person (the agent) tries to gain the commitment of another person (the target). In the present study, data were collected from agents. This decision was based on the findings in the influence literature that data (both on tactic usage and on commitment) provided by agents and targets tend to agree with one another (Yukl and Falbe, 1990; Yukl et al., 1996; Blickle and Gonner, 1999). In particular, the researchers surveyed members of the environmental specialty sub-group of a major safety engineering professional society because many individuals from this population act as agents who must influence others within their organizations regarding environmental management projects (Carter and Dresner, 2001). Data were collected during the summer of 2007 using a web-based survey developed and deployed using the professional edition of Survey Monkey.

The professional society sent cover emails (composed by the researchers) to 1,610 individuals with the URL for the on-line survey. Consistent with Dillman's (2000) recommendation, the researchers made a goodwill gesture (a donation of $1,000 to the organization's scholarship fund) and described it in the cover email. One hundred sixty emails

were not deliverable. Completed surveys (i.e., no missing variables) were received from 311 individuals for a usable response rate of twenty-one percent.

In order to properly select key informants, respondents were asked the following question near the beginning of the survey: "Within the past 3 years have you tried to get someone else in your organization (i.e., your company) to support or cooperate with an environmental project?" Sixty-nine individuals answered *no* to the question, with the remaining 242 respondents answering *yes*. These 242 individuals were used for further analysis. Non-response bias was assessed by performing a MANOVA on the early versus late wave of respondents using commitment and the six influence tactics as the response variables. The model fit statistics were insignificant, indicating no differences between the two groups. We followed Hair et al's (1998) recommendations for making sure the data meet assumptions. Univariate outlier analysis revealed one data point with a DFFITS greater than one. Based on Cohen, Cohen, West and Aiken's (2003, p. 410) guidelines, we omitted this observation, leaving 241 observations. Multivariate outlier analysis showed that there were no influential multivariate outliers. At a power level of 0.80 and alpha level (α) of 0.05, our sample size lets us detect a small-to-medium effect on the dependent variable (Specifically, our effect size index is 0.08 where 0.02 is a "small" effect and 0.15 a "medium" effect) (Cohen, 1977; Cohen, 1992; Green, 1991). Tables 5 and 6 break down the respondents by industry and job function.

The survey used a critical incident approach—i.e., it asked each respondent about one influence attempt (an attempt to gain the commitment of one other person in the company for an environmental management project). To avoid biases (such as the possibility of research participants providing data about their most successful endeavors) the survey asked each respondent to report on their *most recent* attempt to influence someone regarding an

environmental management project. If respondents indicated that they had attempted to influence someone in their organization's supply management function, the survey asked them to report on their most recent attempt to influence someone in this functional area. The other respondents were simply asked to report on their most recent attempt to influence someone else in their organization.

Insert Tables 5 and 6 About Here

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4. Results

4.1 Measurement Validity

A confirmatory factor analysis (CFA) was conducted on the final data set (n=241) using AMOS Version 7.0 software. Several scale items that did not reliably or validly represent their intended construct were eliminated from further analysis, based on low factor loadings or high normalized residual values (Anderson and Gerbing, 1988; Bagozzi and Yi, 1988). Measurement model fit was evaluated using the ratio of χ^2 to degrees of freedom (df), Bentler's (1989) comparative fit index (CFI), Bentler and Bonnett's (1980) non-normed fit index (NNFI), and the root mean square error of approximation (RMSEA) (Steigler, 1990). The recommended threshold values for these indices are <3.00 for χ^2/df (Bollen and Long, 1993), > 0.90 for the CFI and NNFI (Bentler and Bonett, 1980; Bentler, 1989), and $\leq$ 0.08 for the RMSEA (Browne and Cudeck, 1993). As noted above, published validated scales were available for three of the six influence tactics. We had concerns about the low number of items (three items) in these scales and about the face validity of some of the items (concerns also expressed by Schriesheim and Hinkin (1990)). We therefore added additional questions to the survey for each of these three constructs. Our CFA did indeed reveal that using many of these new items in place of

some of the already published items improved model fit (i.e. an increase of two to three points for CFI and NNFI). However, in the end we elected to retain the original published scales in order to facilitate comparisons with extant research using the scales and to ameliorate any concerns about the integrity of our data. Our final model had values of χ^2/df=650/361=2.0, CFI=.90, NNFI=.89, and RMSEA=.07, suggesting a good fit to the data. The final composite reliabilities, standardized factor loadings, and scale items of the measurement model are displayed in the Appendix.

Reliability and construct validity were assessed using the CFA results. The Appendix lists the composite reliabilities (Fornell and Larcker, 1981), all of which exceed .70. Discriminant validity was evaluated by performing chi square difference tests on each pair of constructs for which inter-construct correlations (Φ terms) were large (>.50) (Bollen, 1989). In each test, the hypothesized (two construct) model was a significantly better fit to the data than the null (one construct) model (p<.0001). Additionally, we examined the 95% confidence intervals of the inter-construct correlations to ensure that none of the intervals included 1.00 (Anderson and Gerbing, 1988). These results suggest that discriminant validity exists for the measurement model. All indicator loadings are above 0.5 and highly significant, providing evidence of convergent validity of the scales. Unidimensionality refers to each item's being significantly associated with the intended underlying latent variable and to each item's being associated with one and only one latent variable (O'Leary-Kelly and Vokurka, 1998). The CFA analysis demonstrates the scales' unidimensionality because it verifies the significance of each item loading as well as good overall fit indices, which indicate that the items are indeed associated with the appropriate latent variables and not other latent variables in the model (Menor and Roth, 2007; Huang, Kristal and Schroeder, 2008). The regression results (discussed

in section 4.2) demonstrate that several of the constructs correspond to the dependent variable in a manner that is predicted by existing theory and extant literature, thus providing some evidence of the criterion related validity of the scales used in this paper (Peng, Schroeder and Shah, 2008). Descriptive statistics are presented in Table 7.

Insert Table 7 About Here

4.2. Hypothesis testing

Because testing H1 requires evaluating the effect of numerous influence tactics as group, hierarchical regression was employed. This technique assesses the combined effect of a set of variables (i.e., the influence tactics in our case) by partialing the variance explained by the controls (Cohen et al., 2003).

Table 8 displays the results. As the block one results indicate, the control variables explain 18 percent (R^2=0.18) of the variance in target commitment (p<0.0001). Turning to the second model in Table 8, the control variables combined with the six influence tactics variables (blocks one and two) explain 34 percent of the variance in target commitment—a substantial and significant portion of the variance in this dependent variable (p<0.0001). The contribution of the influence block (block two) is indicated by the difference in R^2 between the two models in Table 8. This difference (0.16) is large and highly significant (p<0.0001). Thus, H1 is supported.

Turning to the individual coefficients of the influence tactics terms, the regression coefficients for rational persuasion (p<0.05), inspirational appeals (p<0.001) and consultation (p<0.05) are positive and significantly associated with target commitment, providing support for H2a, H2d and H2e. Ingratiation is also significant (p<0.05) but in the negative direction, suggesting that greater agent usage of ingratiation results in lower levels of target commitment.

This is not the result predicted in H2f. Turning to the hard tactics, the regression coefficients for coalition and legitimating were not significant. Thus H2b, H2c and H2f are not supported.

5. Discussion and future research

5.1. Influence tactics

This research began with the observation that when key stakeholders commit to a project, they are more likely to strive to overcome barriers to make that project succeed. Recognizing this, the goal of this research was to better understand the individual project champion's role in gaining intra-organizational commitment to environmental projects. To do this we first analyzed a group of variables that are beyond the control of most individual project champions—i.e., the control block in our model. Then, in block two, we added a group of variables that the individual project advocate *can* control—i.e., the group influence tactics. This group explains a very significant amount of the variance in target commitment—roughly doubling the explanatory power of the control-only model. This result makes it clear that individuals' influence behavior can be a big difference maker.

As noted in the literature review, most existing confirmatory studies of environmental management implementation focus on organization-level variables, such as the control variables in our study. These factors are certainly important. However, our analysis demonstrates that the behavior of the *individual project champion* is also an important factor.

In addition to demonstrating the power of the individual project champion, our results provide champions and would-be champions with guidance on *which behaviors* are and are not effective for gaining others' commitment. Should they present the business case? Use hardball tactics? Or perhaps "suck up?" This research has identified four tactics that appear to matter the

most: *inspirational appeals, consultation, rational persuasion,* and *ingratiation* (the first three positively; the fourth negatively). Below we discuss each of these.

Inspirational appeals include such behaviors as appealing to another's ideas, telling the person that the project is the right thing to do, and inspiring enthusiasm. Our decidedly positive finding on inspirational appeals stands in contrast to a recent qualitative study which finds that advocates of environmental management tend to avoid values-based appeals because of the fear that this type of behavior might cause the champion to be stigmatized or marginalized (Crane, 2000). Describing his findings on intra-organizational champions, Crane (2000 pp. 680-681) states:

> The production of green products was argued to have little to do with 'ethical' values… By denying ownership or guardianship of the environment, individuals avoid difficult, even dysfunctional interpersonal confrontation which might have been viewed as inefficient, inappropriate and far removed from the 'rational' decision-making model... To avoid personal marginalization or stigmatization, championing had to be disassociated from any overtly moral agenda.

Similarly, in our study, inspirational appeals is not one of the most frequently used tactics. While it is possible that values-based championing may be risky to the project champion, the results from our large sample study leave little doubt that the approach is effective. The apparent effectiveness of inspirational appeals coupled with Crane's findings on champions' reluctance to use this approach suggests the need for more research on the tactic. For example, are the perceived risks of stigmatization real? If so, can inspirational appeals be used in a manner that is efficacious but that allows agents to avoid risking marginalization?

The positive result for *consultation* suggests that project advocates should solicit others' input on project goals and project execution, and they should strive to make others feel a sense of ownership toward the initiative. *Ingratiation* is also strongly associated with target commitment,

but the effect is negative. Our results strongly suggest that advocates of environmental projects should avoid ingratiation when dealing with their colleagues. It is possible, although admittedly stereotypical, that agents with engineering backgrounds (i.e., the agents in our study) are not as adept at ingratiation as their colleagues from sales, top management and other areas of the company.

Rational persuasion is positively associated with target commitment, although not nearly as strongly as one might expect Note that Table 7 indicates that rational persuasion is the most frequently used tactic in the study and it also has the lowest standard deviation, suggesting it is used frequently in both successful and unsuccessful attempts. This suggests that rational persuasion may be a necessary but not sufficient tactic when applied in the environmental management domain. In other words, rather than being an "order winner" (Hill, 2000), rational persuasion likely serves as an "order qualifier" that is best coupled with other tactics such as inspirational appeals and consultation.

Turning to the other tactics, *legitimating* is not significantly associated with commitment. It is easy for agents to advocate for many environmental projects by appealing to rules and policies since many environmental issues are governed by them. Indeed it may be too easy for environmental champions to rely on legitimating, without carefully considering what other tactics might be effective. The high reported usage for legitimating (Table 7) suggests that this interpretation, although speculative, may be valid.

We also find an insignificant role for *coalition*. Taken together, extant influence studies find that coalition is the most frequently used hard tactic (Table 4). However, extant results on the effectiveness of this tactic are a mix of positive, negative, and non-significant findings.

Perhaps more than any other tactic, more research is needed on moderators that make this tactic effective and ineffective.

5.2. Other factors

The control variables (block one) of our study provide the opportunity to re-examine the role of certain organization-level variables that existing operations and supply chain management studies have suggested are antecedents of environmental management. Customer pressure was marginally associated with commitment in the controls-only model but insignificant in the final model. On the surface, this last result somewhat contradicts earlier studies (Carter and Carter, 1998; Carter and Jennings, 2004) that found customer pressure to be associated with companies' levels of environmental activity. However, these studies focused solely on the consumer products industry, whereas our study encompassed a broad range of industries. Compared to other types of organizations, consumer products companies may well be more susceptible to customer pressure because of proximity to the end consumer. For example, Khanna and Anton (2002) find that companies in the consumer industries have better environmental management systems than do other firms. Looking further back in the supply chain (tier one and tier two suppliers in the automotive industry in particular), Simpson, Power and Sampson (2007) find only a weak relationship between customers' environmental requirements and suppliers' environmental commitment. Additionally, the type of customer influence (collaborative versus evaluative) may make a difference (Klassen and Vachon, 2003). A good avenue for future research would be to take a highly nuanced view of customer influences—perhaps by looking at moderating effects of industry, type of influence, etc.

In our data, top management support is associated with a champion's ability to garner others' commitment. Some environmental management studies (Murphy, Poist and

Braunshweig, 1996; Carter et al., 1998) have not found a significant effect for top management support. However, Carter and Jennings (2004) found that top management support played an important role, but one that was mediated at least in part by corporate culture. Murphy et al. (1996) found no effect for top management support but they did find an effect for "managerial indifference." Given this multiplicity of findings, not to mention the importance of top management support in similar domains, more research is needed to understand how top management support contributes to the implementation of environmental projects.

Interestingly, government regulation is negatively associated with target commitment. In other words, the more a project is motivated by current regulation or the threat of future regulation, the less likely individuals are to commit to the project. Regulation may be a way to force organizations to implement various measures, but regulation alone is not sufficient when it comes to gaining individuals' buy-in. In fact, it may be counter-productive.

Our finding with respect to the direction of the influence attempt (upward, downward, horizontal) is consistent with others' findings that power, particularly positional and reward power, have a weak to non-significant effect on commitment (Yukl and Falbe 1991), especially when the analysis also considers the agent's use of influence tactics (Yukl, Kim and Falbe, 1996). Positional power and influence are distinct phenomena. Our findings add to the body of research demonstrating that skilful use of influence can compensate for lack of positional power.

6. Contributions

6.1. Contributions to operations management research

Approximately ten years ago, an influential study on environmental practices in *JOM* (Handfield et al., 1997) concluded with several questions for future research. One of these was, "How can environmental engineers influence members of the value chain to adopt strategic

environmental initiatives when they do not consider the environment as 'part of my job?'" (p. 312). However, since that time, OM and supply chain researchers have not dug deeply into the process of how individuals influence others regarding environmental projects and what makes the difference between successful and unsuccessful efforts, especially in the context of large sample, hypothesis testing studies. Our model explains over thirty percent of the variance in target commitment. Thus it is an important step in answering Handfield et al.'s question.

Moving beyond the OM body of knowledge on environmental management, we make a broader contribution to the OM field by shedding light on the factors that contribute to cross functional integration—in particular how to gain the buy-in of individuals from other business functions for a particular project. The importance of cross functional cooperation is well-documented in areas like product design (Flynn et al., 1995; Flynn, Schroeder and Sakakibara, 1995; Sakakibara, Flynn, Schroeder and Morris, 1997; Cua et al., 2001), quality (Curkovic, 2000), time-based manufacturing (Sawhney and Piper, 2002; Nahm, Vonderembse and Koufteros, 2003), supplier development (Krause, Handfield and Scannell, 1998) and project management (Scott-Young and Samson, 2008). In spite of its importance to OM, the *antecedents* of cross functional cooperation and other elements of inter-functional integration have been addressed by only a few studies in the OM literature. Furthermore, these studies (Pinto et al., 1993; Calantone, Droge and Vickery, 2002; Ketokivi and Schroeder, 2004) focus on organization-level factors, not on behaviors or other factors that are within the control of the individual project advocate. Thus our study helps extend our discipline's knowledge-base by identifying the actions that an organization's individual managers and primary contributors can take in order to get the buy-in of individuals in OM-related roles (Recall that most of our respondents are from production, operations, purchasing, industrial engineering, facilities, and

logistics, per Table 6). The first implication for OM is that the dominant non-OM thinking (Falbe and Yukl, 1992; Yukl and Tracey, 1992; Yukl et al., 1996; Enns, Huff and Higgins, 2003) regarding many influence behaviors (inspirational appeals, consultation and rational persuasion appears) applies well to OM. A second implication for OM concerns our findings regarding ingratiation. These findings differ from findings in other domains, suggesting that the dominant view of ingratiation does not generalize well to OM. Thus, this paper demonstrates the usefulness of a new theory to OM, but it also identifies some of the limits to its application to the discipline. A third and broader implication for OM is that by "turning up the microscope" and focusing on the behaviors of individual actors, we add to our field's explanatory power. This is consistent with the discipline's recent interest in "behavioral OM" and "behavioral supply management" (Bendoly, Donohue and Schultz, 2006; Carter, Kaufmann, and Michel 2007).

6.2. Contributions to intra-organizational influence research

With a few exceptions, (Enns and McFarlin, 2005; Clarke and Ward, 2006) ours is the first large sample study to apply intra-organizational influence theory to a narrowly defined discipline and issue. Cook and Campbell (1979) recommend testing models in narrow domains in order to understand the degree to which theories apply and do not apply in particular circumstances (Cook and Campbell's well known example is that one cannot say for certain whether a model tested on a combined sample of boys and girls applies to both boys and girls or to only one of the two). Thus, in addition to contributing to the OM literature, we contribute to intra-organizational influence theory by helping establish domain boundaries over which the theory applies.

It is possible that the efficacy of particular influence tactics depends on other variables, such as the target's predisposition to the project or issue. The success of some influence

attempts may depend on whether the agent has *a priori* knowledge of the target's attitude toward the project and on whether the agent is able to "match" the right tactics to this attitude. In other words, there may be an interaction between the target's predisposition and the agent's usage of particular tactics. However, using research participants' self-reports, Yukl et al. (1996) found no such interactions—i.e., no significant interactions between whether targets considered the issue "important" (or "enjoyable") and agent usage of nine tactics when it came to target commitment. These researchers concluded that such interactions may exist, but due to measurement issues and the ambiguity about the causalities involved, a controlled experiment with direct manipulation of variables would be necessary to detect them. We agree, and we believe that this would be a valuable avenue for future influence theory research.

6.3. Contributions to practice

Our research allows us to assess what environmental project champions *are* doing versus what they *should* be doing. Table 9 shows the results of a Tukey's studentized range test for pairwise differences among the average reported usage of the tactics. The table also repeats the standardized regression weights (from Table 8) in order to indicate the efficacy of each tactic. Rational persuasion is the most frequently used tactic, and it is fairly effective. However, inspirational appeals is the most effective tactic (with standardized beta of 0.22), yet it is used less than rational persuasion (or consultation). Ingratiation, which has a negative effect on commitment, is used as frequently as consultation and inspirational appeals; and legitimating, which does not have a significant effect, is used with great frequency as well. Thus Table 9 suggests that many individuals lack an understanding of which tactics to emphasize when it comes to seeking others' buy-in to environmental projects. The findings in this paper can help remedy this state of affairs.

Insert Table 9 About Here

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7. Limitations

We collected our data from environmental health and safety professionals. Most of these individuals reported on their attempts to influence individuals in operations and supply chain-related areas of their organizations. These environmental professionals initiate a great number of the environmental projects in the typical organization. However, some projects may be initiated elsewhere, such as in marketing or investor relations or by individuals who do so as an extra-role behavior, rather than as a part of their job responsibilities. Our findings may not generalize to these individuals. Similarly our findings may not generalize to influence targets in areas of the firm such as sales, marketing, and information systems.

Given the number of studies that have used intra-organizational influence theory, one might expect that there would be a widely available and agreed-upon, well validated set of scales. Unfortunately this need has yet to be met. As discussed earlier, Kipnis et al. developed scales for their taxonomy of influence tactics--three of which are included in our paper. Kipnis et al. validated these measures using data on upward, downward and horizontal influence attempts. However, their validation efforts do not meet most contemporary standards. Using more rigorous methods, Schriesheim and Hinkin (1990) purified the Kipnis, et al. scales; however, since their objective was purifying the Kipnis et al. scales (not scale development) Schriesheim and Hinkin removed problematic items but did not add new ones, resulting in very brief (i.e. three item) scales. Additionally, Schriesheim and Hinkin only used data on upward influence attempts and primarily used data obtained from student samples. Other scales exist (Yukl, Lepsinger and Lucia, 1992); however, these scales have been validated for influence

targets but not influence agents; and they are proprietary and have not been published for other researchers to use. Additional scale development work would be a fruitful area for future research.

As with any measure of attitude—especially an informant's assessment of another's attitude—commitment is difficult to measure. However, we note that this construct has been similarly measured in high quality OM survey-based articles in the past—e.g., top management commitment (Ahire, Golhar and Waller, 1996), buying firm's commitment (Prahinski and Benton, 2004) and supplier commitment (Krause, 1999). Additionally, our commitment measure is based on the Occupational Commitment Questionnaire (OCQ) (Mowday et al., 1979), which is one of the best validated and frequently employed scales in the business literature. Nevertheless, commitment is a highly personal attribute and thus all measures of commitment are likely to be imperfect. Additionally, we do not control for personality characteristics that may covary with one's inherent likelihood to grant his or her commitment.

8. Conclusion

The adoption of new business practices often begins at the bottom or middle of the organizational hierarchy (Harrington, 1991; Weick and Wesley, 1996; Gattiker and Gerard, 2005). In these cases wholesale "organization-level" adoption is really the sum of many local level projects or "small wins" (Cole, 2001). Thus our focus on the individual project and individual project advocate, as opposed to a company level of analysis, is a natural complement to existing research. In addition to contributing to the academic community's understanding of environmental project implementation and of intra-organizational influence, our rather granular focus allows us to give specific, actionable advice to environmental management advocates within companies.

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Table 1
Elements of the intra-organizational influence framework (Kipnis et al., 1980; Yukl and Falbe, 1990)

Agent	A project advocate or "policy entrepreneur" (Drumwright 1994) who seeks to influence another person (target) in his/her organization regarding an issue or project (an environmental management project in the present study)
Target	The person whom an agent tries to influence
Influence attempt	A series of one or more incidents or encounters (phone conversation, email correspondence, etc.) in which the agent tries to get the target to buy into the project
Influence tactics	Tactics, such as rational appeals and ingratiation, which the agent uses during the influence attempt in order to influence the target
Outcome	Target's level of commitment to the project after the influence attempt

Table 2
Two widely accepted taxonomies of influence tactics

Influence tactic	Type*	Definition	Included in Kipnis taxonomy	Included in Yukl taxonomy
Rational Persuasion/Rationality	R	Using logic, explanation and factual evidence	√	√
Inspirational Appeal	S	Appealing to the target's values, ideals or aspirations		√
Consultation	S	Seeking the target's participation in implementing the request; Offering to make modifications in response to the target's input		√
Ingratiation	S	Making the other person feel important; Use of friendliness, praise or humility	√	√
Exchange	H	Offering to reciprocate or share benefits; Invoking past instances of past favors done for the target	√	√
Personal Appeal	S			√
Coalition	H	Invoking the support of co-workers or others as a reason the target should support the request	√	√
Legitimating	H	Claiming authority over the target; citing laws, rules, policies or conventions that support the request		√
Pressure/Assertiveness	H	Using demands, threats or deadlines; anger or aggressiveness	√	√
Upward Appeal	H	Using the support of higher-ups as a reason the target should support the request; Asking higher ups to back-up the request	√	

*R=Rational/Reason-based, S= Soft, H=Hard

Notes:
Kipnis et al. initially included two other tactics, sanctions and blocking, but these were dropped due to conceptual and methodological problems.
Yukl and colleagues (Yukl, Chavez and Seifert, 2005) proposed two additional tactics (apprising and collaboration) in 2005; however, these last two tactics have not received consideration from the broader community of scholars; and thus it seems premature to include them at this time.

Table 3
Overview of intra-organizational influence studies

	Taxonomy Development Studies			Studies examining target commitment as the dependent variable and usage of tactics as independent variables (the focus of the present study)									Studies using agent salary, promotability, and other characteristics as the dependent variable and usage of tactic as independent variables						Studies examining frequency of tactic usage as the dependent variable			
Tactic	1	2,3	4	5	6	7	8	9	10	11	12	13	3	14	15	16	17	12	18	19	20	21
RP	√	√	√	+	ns	+	+	+	+	x	+	+	x	ns	+	+	+		√	√	√	√
IA			√	+	+	+			*	x		+							√			
Cons			√	+	+	+		+	ns	x		+							√			
Ingra	√	√	√	ns	ns	+				x		*	x	ns	-		+	#	√	√	√	√
Exchg	√	√	√	ns	ns	+			-			*	x	ns		-	ns		√		√	
PA			√	ns	-	ns			+													
Coal	√	√	√	-	-	ns			ns	x		+	x	ns					√	√	√	
Legit			√	-	ns	ns											ns					
Press	√	√	√	ns	-	-			-			ns	x	-	-	+	ns	#	√	√	√	√
UA	√	√										*	x	ns		-			√		√	√
SP																ns						
FR																+						
Sanct	√																			√		
Block	√																					

RP=rational persuasion, IA=inspirational appeals, Cons=consultation, Ingra=ingratiation, Exchg=exchange, PA=personal appeals, Coal=coalition, Legit=legitimating, Press=pressure/assertiveness, UA=Upward Appeals, SP=Self promotion, FR=Favor rendering, Sanct=sanctions; Block=blocking

* Dropped due to measurement problems
x Grouped tactics into clusters. Tactic-level effects on the dependent variable are not reported.
Interactions complicate interpretation of these effects.

Key to Studies in Table:
1 (Kipnis et al., 1980)
2 (Kipnis and Schmidt, 1983)
3 (Kipnis and Schmidt, 1988)
4 (Yukl et al., 1992)
5 (Yukl and Tracey, 1992)
6 (Falbe and Yukl, 1992)
7 (Yukl et al., 1996)
8 (Yukl, Kim and Chavez, 1999)
9 (Dutton et al., 2001)
10 (Enns et al., 2003)
11 (Piderit and Ashford, 2003)
12 (Blickle, 2003)
13 (Clarke and Ward, 2006)
14 (Rao et al., 1995)
15(Thacker and Wayne, 1995)
16 (Wayne, Liden, Graf and Ferris, 1997)
17 (Higgins, Judge and Ferris, 2003)
18 (Yukl and Falbe, 1990)
19 (Ferris, Dulebohn, Frink, George-Falvy, Mitchell and Matthews, 1997)
20 (Mallalieu and Faure, 1998)
21 (Blickle, 2000B)

Table 4
Mean frequency of tactic use reported in existing studies

Influence Tactic*	Type **	Ave. across studies ***	Blickle 1998	Blickle 2000A	Blickle 2003	Clarke 2006	Hochwarter 2000	Kipnis 1980	Mallalieu 1998	Thacker 1995	Wayne 1997	Yukl Falbe 1990	Yukl Tracy 1992
Rational Persuasion	R	**3.9**	3.2	4.0	4.7	3.0	4.2	3.4	5.4	3.1	5.6	3.2	3.3
Consultation	S	**3.2**	2.8			3.2						3.4	3.3
Ingratiation	S	**2.8**	2.7	2.4	3.0		2.8	2.7	4.0	2.6		2.6	2.7
Inspir. Appeal	S	**2.7**	2.2			2.9						2.8	2.8
Coalition	H	**2.4**	1.8	2.9		2.5	2.1	2.2	3.5			2.2	2.1
Personal Appeal	S	2.3	2.5										2.2
Assertiveness	H	2.3	2.1	2.0	3.1	2.6	1.8	1.6	3.4	1.8	3.3	1.9	1.8
Legitimating	H	**2.2**	2.0										2.4
Exchange	H	2.0	2.4	1.7			1.7	2.0	2.8		2.1	1.7	1.7
Upward Appeal	H	2.0		1.6			2.0	1.7	2.4		1.8	2.2	

* **Bold** tactics are included in this study's research model.
** R= Reason-based, S=Soft, H=Hard
*** All studies reported tactic usage on 5 point scales (e.g., 5=used very frequently, 1=used very infrequently)

Table 5
Industry breakdown

Industry	**Percent of total**
Manufacturing	44
Oil/Gas/Mining	5
Construction	9
Government	7
Other (incl. transportation, utilities, retail)	35

Table 6
Functional affiliation of the influence target

Purchasing	50%
Industrial Engineering/ Facilities	12%
Management/Top Management	8%
Production/Operations	7%
Transportation/Shipping	7%
Other	16%

Table 7
Descriptive statistics

	Construct	**Mean**	**Std. Dev**
Influence tactics	Rational persuasion	5.4	0.9
	Legitimating	4.9	1.3
	Consultation	4.5	1.3
	Ingratiation	4.3	1.2
	Inspirational appeals	4.1	1.2
	Coalition	3.7	1.5
Controls	Government regulation	4.7	1.6
	Top mgt. Support	4.5	1.6
	Cust. Pressure	4.3	1.7
	Return *(5 pt scale)*	4.6	1.1
	Upward direction	46%	---
	Downward direction	17%	---
Dependent var.	Commitment	4.2	1.4

Return was measured on a five point scale with five being the greatest anticipated financial return at the time of the influence attempt and one being the least. Direction of influence attempt was entered using two dummy (1,0) variables: upward and downward. The % of horizontal attempts is 37%. Other variables were measured on a seven

point scale with higher scores indicating greater presence of the construct. See Appendix for detailed items and response scale wording.

Table 8
Regression results –standardized coefficients (β)

	Model 1 (Controls)	Model 2 (Controls + Hypotheses)	Hypothesis Supported
Block 1(controls)			
Upward (1,0)	-0.07	-0.10	
Downward (1,0)	-0.10	-0.08	
Target in purchasing (1,0)	0.13*	-0.05	
Government regulation	-0.08	-0.11*	
Customer pressure	0.14*	0.06	
Top management support	0.24***	0.18**	
Return of project	0.13*	0.13**	
Block 2 (influence tactics)			
Rational persuasion *(H2a)*		0.13*	Yes
Coalition *(H2b)*		0.01	No
Legitimating *(H2c)*		0.13	No
Inspirational appeals *(H2d)*		0.22***	Yes
Consultation *(H2e)*		0.15*	Yes
Ingratiation *(H2f)*		-0.13*	No†
R^2	0.18 ****	0.35****	
Adjusted R^2	0.15	0.31	
ΔR^2 for block *(H1)*	----	0.17****	Yes
* p<0.05 **p<0.01 ***p<0.001 **** p<0.0001			
Dependent variable: Target commitment to the project			

† A positive effect was hypothesized

Table 9
Tactic usage versus effectiveness

Tukey Group*	Influence Tactic**	Mean Usage	Standardized Regression Beta
A	**Rational Persuasion**	**5.4**	**+0.13**
B	Legitimating	4.9	(n.s)
C	**Consultation**	**4.4**	**+0.15**
C, D	**Ingratiation**	4.3	**-0.13**
D	**Inspirational appeals**	**4.1**	**+0.22**
E	Coalition	3.7	(n.s)

*Tactics within a group have means that are not statistically significant from one another (e.g., usage of consultation and ingratiation does not differ significantly; but usage of legitimating differs from usage of all other tactics).

** **Bold** tactics have a statistically significant effect on commitment. Standardized regression betas and their significances are from Table 8.

Appendix
Questionnaire Scale Items

Influence Tactics:

When seeking the person's buy-in to the project, to what extent did you do the following:[1]	Standardized Factor Loading[2]
Rational Persuasion[3] (Internal consistency = 0.84)[4]	
used logic to convince him or her? (RP13S)	0.75
explained the reasons for my request? (RP31S)	0.82
presented him or her with information in support of my point of view? (RP38S)	0.81
used a business case? (RP90)[5]	
presented facts/statistics to substantiate my appeal? (RP91)[5]	
Inspirational Appeals (Internal consistency = 0.85)[6]	
aroused enthusiasm concerning the benefits of the project? (IA3)	0.65
tried to inspire his/her environmental ideals? (IA4)	0.86
stirred his/her emotions concerning the environmental importance of the project? (IA5)	
told him/her that the project was the right thing to do? (IA6)	0.57
appealed to his/her environmental values (IA2) (Deleted: correlated error with COM3 and COM4; Cross loading on COM3 and COM4)	
Consultation (Internal consistency = 0.84)	
told him/her what I was trying to accomplish and asked if he/she knew a good way to do it? (CO1)	0.75
explained the goals of the project and asked for input (CO2)	0.80
sought his/her input in developing the project's implementation? (CO4)	0.88
made him/her feel as if he/she was an owner of the project? (CO5)	0.78
Legitimating (Internal consistency = 0.88)	
said that the request was consistent with organizational rules and policies? (LE2)	0.89
stated that the project was part of a broader company strategy? (LE3)	0.82
showed him/her that the project is consistent with organizational guidelines? (LE91)	0.87
stated that the project supported organizational goals (LE1)	0.81
Ingratiation[3] (Internal consistency = 0.97)	
acted in a friendly manner? (IG17S)	0.59
acted very humbly while making my request (IG09S)	0.78

[1] Influence tactics items used a seven-point Likert scale: 1 = *to no extent whatsoever* and 7 = *to a very great extent*
[2] All factor loadings $p<.001$.
[3] Based on Kipnis et al. (1980) and Schriesheim and Hinkin (1990).
[4] Composite reliability (Fornell and Larcker, 1981).
[5] Instead of supplementing the scale with these items, the original Kipnis et al. (1980) / Schriesheim and Hinkin (1990) scale (consisting of items with labels ending in letter 's') was retained.
[6] Based loosely on McFarland, Dhallagalla and Tasadduq (2006).

tried to make him or her feel good about me? (IG18S)	0.84
went out of my way to be polite? (IG94) [5]	
said things to make him/her feel important? (IG95) [5]	
attempted to show that I liked him/her? (IG96) [5]	

Coalition[3] (Internal consistency = 0.83)

obtained the support of co-workers to back up my request? (CT12S)	0.83
mobilized other people in the organization to help me in influencing him or her? (CT01S)	0.72
obtained the support of my subordinates to back up my request? (CT32S)	0.79
pointed out that others have already endorsed the project? (CT02) [5]	

Dependent Variable:

Commitment (Internal consistency = 0.95)

As a result of my interaction with the person regarding the project, he or she…

would be likely to "talk up" the project among other employees? (COM1)	0.87
is proud of being associated with the project? (COM2)	0.94
would put in extra effort if it would help the project succeed? (COM3)	0.92
committed to the project? (COM6)	0.88
really cares about the project? (COM 4) (Deleted: Correlated errors with COM6 and IA2; high standardized residual with IA3)	

Other Variables:

Government Regulation (Internal consistency = 0.79)

This project was motivated by…[7]

current government legislation (GOV1)	0.99
the threat of future government legislation (GOV2)	0.60
targeted actions by activist groups (GOV3) (Deleted: factor loading < 0.50; lack of face validity; numerous high cross loadings and standardized residuals)	

Customer Pressure (Internal consistency = 0.92)

social/environmental programs that our customers have in place (CUS1)	0.79
customers who seek socially/environmentally responsible suppliers (CUS2)	0.95
increased awareness of social/environmental issues among our customers (CUS3)	0.94

Top Management Support (Internal consistency = 0.91)

the examples top management provides	0.79
requirements made by senior management	0.98
top-down initiatives	0.87

[7] Seven-point Likert scale: 1 = *strongly disagree* and 7 = *strongly agree*

Appendix

Direction of Influence (Upward, Downward)

Please pick the answer that best describes your relationship with the person at the time you tried to influence him or her. The person's rank in the organizational hierarchy was...

(Responses: Lower than yours, About the same as yours, Above yours)

(To incorporate direction of influence in the model, the researchers created 2 dummy variables: Upward and Downward. Observations indicating the "lower" were coded 1 on downward and 0 on upward; observations indicating "above" were coded 1 on upward and 0 on downward; observations indicating "same" were coded 0 on both upward and downward, making "same" the reference group.)

Purchasing

Check one:

I have tried to get purchasing to support an environmental management project, so I will tell you about that.

I have not tried to get purchasing to support an environmental management project, so I will tell you about seeking someone else's support.

Return of project

When the project was being considered, how did it compare to other projects in the company from a financial / breakeven standpoint?

(Responses: 1 *This project was much less attractive,* 2 *This project was somewhat less attractive,* 3 *About the same,* 4 *This project was somewhat more attractive,* 5 *This project was much more attractive)*
