Does the Organization Power through Top Management Support help Internal Auditors to Reduce the Deaf Effect for Risk Warnings?

CHAPTER OVERVIEW

Ignoring risk warnings, a phenomenon known as the deaf effect, can contribute to the problem of project escalation. Internal auditors, who issue risk warnings when a project is going away from the expected course, need to look for improved ways that could help message recipients to listen more to the risk warnings. In this paper, we investigate whether internal auditors could use their organization power through top management support to influence the deaf effect. Our scenario-based experiment showed no significant main effect of top management support on the deaf effect. Our study shed more light on this counter-intuitive result, since we found that top management support interacted with the messenger-recipient relationship. Top management support is helpful in reducing the deaf effect when the messenger is seen as an opponent and may be contra-productive when the messenger is seen as a collaborative partner.

Key words: deaf effect, internal audit effectiveness, organization power, top management support, internal auditor

2.1 INTRODUCTION

Project escalation (i.e., continued commitment to a failing project) is a common and costly problem that occurs in the context of information systems (IS) projects, often in spite of risk warnings issued by internal auditors. Internal auditors frequently notice that management turns a deaf ear to such warnings, a phenomenon known as the deaf effect (Keil and Robey, 1999, 2001). Internal auditors cannot be effective in stopping escalation if they cannot influence the deaf effect in such a way that managers (i.e. decision makers) heed their warnings. In this paper, we investigate whether internal auditors could use their organization power through top management support to help overcome the deaf effect.

While there have been a few studies of the deaf effect (Keil and Robey, 1999, 2001; Cuellar, 2009; Lee et al, 2014; Nuijten et al, 2016), they have tended to focus on characteristics of the messenger and the messenger's relationship with the recipient that tend to be stable and not easily changed. The management literature offers little evidence for the key role of top management support in the success of the organization processes and programs and in particular the internal audit function. Aside from one study by Sarens and De Beelde (2006b) that investigated the effect of 'organizational support' in internal audit practices, we know of no studies that have examined how auditors can use support from top management to contextualize their message so as to more strongly influence message recipients. With this study we aim to obtain a better understanding of the concept 'top management support' for internal audit and its influence on the internal audit effectiveness. Based on previous research (Keil and Robey, 2001; Cuellar, 2009; Lee et al, 2014; Nuijten et al, 2016), in this study we tested hypotheses about factors involved in causing the deaf effect and aim to contribute to an improved understanding of the deaf effect in escalating IT-projects that could further help the empirical research on the effectiveness of internal audit. Our aim is to examine the main causal and interaction effects regarding to how organization power through top management support influences the deaf effect for risk warnings by the internal auditor who is seen as a collaborative partner or opponent. Additionally, following Nuijten et al, (2016), we further examine whether decision makers are more likely to listen to the risk warnings from an internal auditor who is seen as a collaborative partner. We also examine whether decision makers will be less motivated to listen to the risk warning, when the messenger is seen as an opponent – such an internal auditor is often labelled as a 'policeman'.

The paper is organized as follows. We start with an overview of deaf effect literature and further describe our research model and hypotheses. Next, we describe our research methodology, followed by the results we obtained. We conclude the paper with discussion and implications for research as well as practice.

2.2 LITERATURE REVIEW AND THEORY BASE

Keil and Robey (1999) were first to introduce the term 'deaf effect' and defined it as a situation in which actors in organizations "turn a deaf ear to signs of trouble." In their articles Keil and Robey (1999; 2001) present specific examples of the deaf effect in IT projects based on interviews with both internal and external auditors who expressed their frustration in blowing the whistle on a troubled project only to find that their risk warnings were ignored (or even worse, being fired from their job). Following these first field-based observations of the deaf effect, other researchers including Cuellar (2009) started scenario-based laboratory experiments to investigate the factors that influence the deaf effect. For example, Cuellar et al, (2006) found that a significant predictor of the deaf effect was the messenger credibility. In addition to the messenger credibility, Lee et al, (2014) found that role prescription of the messenger was an important factor of the deaf effect.

In their recent paper Nuijten et al, (2016) suggest that the messenger-recipient relationship (MRR) is a key factor that influences the deaf effect. More specifically, Nuijten et al, (2016) draw on stewardship theory and show that when an auditor is seen as a collaborative partner, message recipients will be more likely to listen to the risk warnings reported by the internal auditor. Inspired on stewardship theory they suggested that decision makers are more likely to be responsive to risk warnings when the messenger aims at contributing to management performance instead of exposing management failures. In our research, we leverage the work of Nuijten et al, (2016) by examining how the organization power of the internal auditor through top management support can be used in a way that message recipients will be willing to turn less deaf ear to the risk warnings of the messenger.

Our study draws further on the whistle-blowing effectiveness theory (Near and Miceli, 1995). Near and Miceli (1995) argue that the effectiveness of whistle-blowing is based on the personal characteristics (credibility and power) of the whistle-blower and the compliant recipient, moderated by the support for the whistle-blower and the wrong-doer as well as situational and organizational characteristics of the wrong-doing. In their model (Near and Miceli, 1995), the relative credibility and power of those actors was central referring to internal auditors who have – in certain situations – role prescribed power and authority (so one would expect them to be effective whistle-blowers, according to Near and Miceli's model). In their model, the Whistle-Blower's power variable is measured by several operational measures and support from superiors is one of these operational measures. Similarly, in our study we use the top management support to internal auditors in the organization as an operational measure of organization power of the internal auditor.

While prior research has advanced our understanding of the deaf effect, the effect of organization power through top management support, to our knowledge has not been examined in this context. This gap in our understanding is an important one to explore because there are good theoretical reasons to believe that top management support could reduce the deaf effect.

2.3 RESEARCH MODEL AND HYPOTHESES

We based our model and hypotheses on stewardship theory (Davis et al, 1997) and whistle-blowing theory (Near and Miceli, 1995). Following Nuijten et al, (2016) in our study we focused on the relationship between the messenger and the recipient at an inter-personal level: with the internal auditor in the role of the provider of a risk warning and the decision maker in the role of recipient of the risk warning. Within the messenger-recipient relationship, the internal auditor can be seen as a collaborative partner or as an opponent.

We have defined the following research questions: 1) could the organization power of the internal auditor (through high or low top management support) be of influence on the deaf effect?, 2) could the messenger-recipient relationship (MRR) be of influence on the deaf effect and (3) is the influence of MRR on the deaf effect moderated by the organization power of the internal auditor through top management support?

Consistent with previous studies on the deaf effect, the variable that we aim to explain in our study is whether or not decision makers are likely to continue a troubled IT-project after the internal auditor provides a risk warning that the project should be stopped or redirected and not continued as planned. In figure 2-1 we present our research model.

Organization Power is operationalized through top management support and acts as a quasi-moderator in our research model. Following Nuijten et al, (2016), our research model contains the messenger-recipient relationship (MRR) as an independent variable. Furthermore, consistent with previous studies, we included the decision makers' individual risk propensity, gender and years of work experience in our model. Our study differs from Nuijten et al, (2016), since we did not include the relevance that individuals assigned to the message and the perceived risks in our model, for the reason that we did not want to overcomplicate our model and that those variables did not contribute to the underlying logic of our model. This was confirmed by the results of our measurements of those two variables, so for those reasons we decided to keep them out of the research model that we present in figure 2-1 and that we will further elaborate throughout this section.

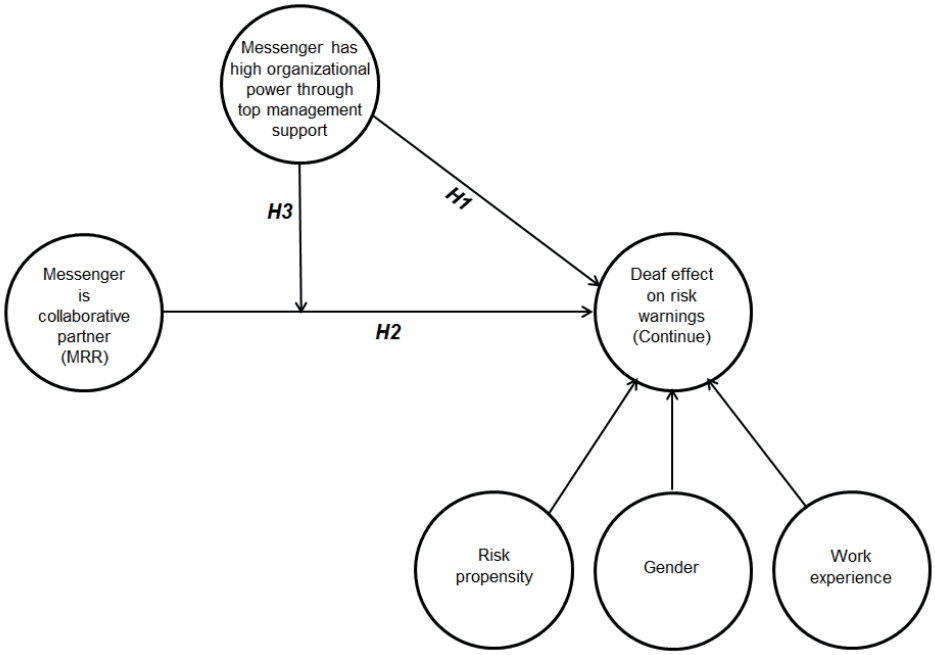

Figure 2-1. Research model

Hypotheses

Main Effect of high vs. low organization power on continuation of a course of action

According to Near and Miceli (1995), whistle-blowers with power may be less likely to experience retaliation. In their research Near and Miceli (1995) found that whistle-blowers who lacked support from either top management or their immediate super supervisors, were much more likely to suffer reprisal, confirming in another study that federal whistle-blowers who suffered retaliation were less likely to be effective than those who did not (Miceli and Near, 2002). The study on the predictors of external whistleblowing by Sims and Keenan (1998), showed that the whistleblowing reporting will be encouraged if the immediate supervisor of a potential whistle-blower is perceived as supporting.

In the area of internal audit effectiveness, several recent studies have also demonstrated that support for internal auditing by top management is an important determinant of its effectiveness. Mihret and Yismaw (2007) performed a case study on the internal audit effectiveness within the Ethiopian public sector and found that management support to the internal auditor is one of the two most important factors (the other being internal audit quality) influencing internal audit effectiveness. Management support in their study was defined as the management commitment to implement the audit recommendations and maintain a strong internal audit department. Cohen and Sayag (2010) performed an empirical examination of the effectiveness of internal auditing in

Israeli organizations. Their correlation and regression analysis showed support from top management to be the main determinant of internal audit effectiveness. Similarly, Van Peursem (2005) links the internal audit effectiveness with management support and found indications that acting alone and without broad management support, can be truly ineffective for internal audit.

Based on existing theories in other research areas, like applied psychology (Eisenberger and Huntington, 1986), Sarens and De Beelde (2006b) measured organizational support towards a focus on the internal auditing function as a whole within six Belgian companies and found evidence that the opinions and recommendations of an internal audit activity that receives more support by top management and more accepted and appreciated by the people in the organization. In their further research, Sarens and De Beelde (2006a) found that the overall acceptance and appreciation of the internal audit within a company is strongly dependent upon the support they receive from senior management. Similarly, other studies found that support from senior management is fundamental for internal audit effectiveness (Sawyer, 1973; Cohen and Sayag 2010; Mihret and Yismaw 2007; Sarens and De Beelde 2006a; 2006b).

So, in our study we posit that the higher the messenger's organization power (through high top management support) the less likely the manager will continue the course of action. This represents a negative causal relationship between organization power and deaf effect. This results in the following hypothesis:.

H1. *Decision makers are more likely to continue a course of action (respond deaf to a risk warning) when the messenger has low organization power.*

Main Effect of the messenger-recipient relationship on continuation of a course of action

In deaf effect situations within our domain of interest, the internal auditor plays the role of the messenger who delivers a risk warning to a recipient (and decision maker) who must decide whether or not to take corrective action or not to listen to the risk warning and continue the project as planned. Nuijten et al, (2016) differentiate between a messenger-recipient relationship (MRR) in which the internal auditor is seen as a collaborative partner and one in which the internal auditor is seen as an opponent. In their study, Nuijten et al, (2016) found that decision makers are more likely to heed the auditor's risk warning and discontinue the course of action when the messenger is seen as a collaborative partner instead of an opponent. In our study, we re-test the effects of the MRR on the deaf effect through replication. Thus, we hypothesize the following:

H2. *Decision makers are less likely to exhibit the deaf effect and continue a failing course of action when the messenger issuing risk warnings and advocating project redirection is seen as a collaborative partner.*

Moderating Effect of high vs. low organization power on continuation of a course of action

Besides on the main effect of Organization Power on the continuation decision by the message recipient, our interest in this research concerns the interaction effect of the organization power through top management support can have with the messenger-recipient relationship (MRR). As we theorized earlier, Near and Miceli (1995) argue that the effectiveness of whistle-blowing is based on the personal characteristics (credibility and power) of the whistle-blower and the compliant recipient, moderated by the support for the whistle-blower and the wrongdoer as well as situational and organizational characteristics of the wrong-doing. Based on that, we theorize that the organization power of the messenger through top management support moderates the influence of MRR on the deaf effect. We expect that managers are more reluctant to listen to a risk warning when the messenger is seen as an opponent as opposed to a collaborative partner. However, when this opponent messenger has high organization power through top management support, managers will be more likely to listen to the warning even though it comes from an opponent.

So, in the high organization power conditions, the influence of MRR on the decision to continue is weaker. We expect that in the high organization power conditions decision makers are more likely to follow any advice, regardless whether the message comes from a collaborative partner or an opponent. In the situation when the messenger will have low organization power through low top management support, the decision maker will become more reluctant to listen to an opponent messenger, while the decision maker is still likely to listen to the messenger who is seen as a collaborative partner. For this reason, we expect that the influence of the MRR on the deaf effect will be stronger under the condition of low organization power of the messenger and weaker under the condition of high organization power. This results in the following hypothesis for the moderating effect:

> **H3.** *The messenger's organization power moderates the influence of MRR on the deaf effect. Specifically, the influence of MRR on the deaf effect is strengthened when the messenger has low organization power.*

2.3 METHOD

To test our hypotheses, we conducted one scenario-based laboratory experiment. We created the setting for the investigation of the phenomenon and we had control over the independent variable(s) and the random assignment of the participants to the treatment and non-treatment conditions (Boudreau et al, 2001). We manipulated messenger-

recipient relationship (MRR) and organization power through top management support in 2x2 factorial design.

Participants

For our experiment we used a group of 93 post-graduate students of accounting at a Belgian University. The students were in average 22.6 years old (s.d. 2.4) and had an average work experience of 0.24 years (s.d. 0.75). 87 percent of the students had a European nationality dominated by Belgian citizens. 56 percent were male and 44 percent were female. None of the participants were involved in pilot-testing of our scenario for the purpose of this study.

The students participated in the experiment on a voluntary basis in the last 20 minutes of their courses. We told the participants that this was an experiment study about business decision making in a strategic information system project situation and that their answers would remain anonymous. We randomly assigned each participant to one of the experimental scenarios. From the 93 returned envelops there were 15 forms that we could not use for analysis since the main question (decision) and some other questions were not answered in an unambiguous way (missing, scratched or multiple answers).

In our study we used student subjects as surrogates for managers. Previous studies on the deaf effect has employed student subjects (Cuellar et al, 2006; Lee et al, 2014). While the appropriateness of student subjects has been debated, Keil et al, (2007) argue that data from student subjects in studies focusing on experiments and theory application such as ours, are acceptable (Keil et al, 2007). Harrison and Harrrell (1993) and Sitkin and Weingart (1995) suggest that the use of student subjects is often appropriate when the experiment involves human decision making. According to Ashton and Kramer (1980), p. 3 "real-world decision makers possess information-processing characteristics and biases that are extremely similar to their student counterparts". This is also supported by Nuijten et al, (2016) who tested a core model of the deaf effect including the MRR construct with both students and practitioners and found that results of the experiment were consistent regardless of the type of subject used. Finally, Cook and Campbell (1979) stated that, in practice, external validity is often sacrificed to achieve internal and construct validity and for the greater statistical power that comes through having isolated and controlled settings (e.g. classroom), standardized procedures and homogenous respondent populations. For these types of validity, homogenous samples, such as student subjects, and laboratory experiments are more important than the degree to which they function as exact surrogates for practitioners. For theory testing, after internal validity is achieved, external validity is addressed by testing across multiple contexts with different types of participants.

Scenario and Treatments

In our scenario the participants were asked to consider themselves to be the project owner of an information technology project within an insurance company. The scenario used in this experiment was based on one used by Nuijten et al, (2016) and describes a situation in which the project owner is informed that Mr. Johnson from the internal audit department has recently found serious issues with the project and recommends that the project should be redirected (i.e., not continue as planned).

Consistent with Nuijten et al, (2016), we independently manipulated the messenger-recipient relationship (MRR) to be either collaborative or not. The treatment of the relationship between the messenger and the decision maker was phrased as follows for the low stewardship relation (low collaborative partnership):

> *Mr. Johnson has a long history of working AGAINST IS project teams with the goal of exposing project failings, thus embarrassing project owners. He is seen as policeman who does not add any value to the development process. Thus, Mr. Johnson is treated as an OPPONENT WHO IS NOT TO BE TRUSTED.*

The high stewardship relation treatment contained elements of being seen as a 'collaborative partner' and was phrased as follows:

> *Mr. Johnson has a long history of working COLLABORATIVELY with IS project teams with the goal of helping to identify and manage project risks, thus enabling project owners to be successful. He is seen by the project management as adding value to the process. Thus, Mr. Johnson is treated as a TRUSTED PARTNER to management.*

We rephrased this scenario with the typical element – organization power – that we developed for this study.

The HIGH- organization power was phrased as follows:

> *Within the company, internal auditors receive an enormous support by the executive board. Strong top management support is shown by the fact that executive board pays great attention on implementing audit recommendations by project owners and even follows up personally on that. As a consequence, Mr. Johnson in his role as an internal auditor has a very STRONG ORGANIZATION POWER within the company.*

The LOW- organization power was phrased as follows:

> *Within the company, internal auditors receive a very poor support by the executive board. Poor top management support is shown by the fact that executive board does*

NOT pay attention to implementing audit recommendations by project owners and does NOT follow up on that in any fashion. As a consequence, Mr. Johnson in his role as an internal auditor has a very LOW ORGANIZATION POWER within the company.

Constructs and Measures

Our independent variables were manipulated and treated as dichotomous variables. The high vs low level of organizational power of the internal auditor through top management support was recorded in the variable OrgPower (1=high organization power; 0=low organization power. Messenger recipient relationship was recorded in the variable MRR (1=collaborative partner; 0=opponent).

In our experiment we use the decision to continue a troubled information systems project (Continue) despite the auditor's risk warning and recommendation to redirect the project as the dependent variable. Consistent with Nuijten et al, (2016) we assessed this construct by applying two measurement items (Continue1 and Continue2).

Consistent with prior studies (Keil et al, 2000; Cuellar et al, 2006), risk propensity (RiskProp) was measured using four items adapted from Sitkin and Weingart (1995). In the Appendix all of the construct measures that were employed are shown.

2.4 RESULTS

Table 2-1 presents the construct reliability cronbach's alpha scores measuring the internal consistency with a given construct's items (weighting them all equally). Hair et al, (1998) note that a cronbach's alpha score slightly lower than 0.7 might still be acceptable for exploratory research and Nunnally (1967) recommends a threshold value of only 0.6 for exploratory research. In the table 1a we present the cronbach's alpha scores we obtained. We conclude that the reliability of our measurements of the constructs meet the thresholds.

Table 2-1. Reliability of Measurements

Contruct	Items	Cronbach alpha
Continue	2	0.900
MRR_{mc}	3	0.785
$OrgPower_{mc}$	4	0.922
RiskProp	4	0.846

Convergent and Discriminant Validity

We performed a Principal Components Analysis, which is an exploratory factor analysis of clustering measurements into factors. We assessed whether or not our measurement-

variables, that are supposed to tap into the same construct, indeed stick together and are not sticking too much to measurements that were supposed to tap into other constructs. We used Varimax rotation and a fixed number of factors that was equal to the number of variables. The results are presented in table 2-2 below.

Table 2-2. Construct Validity

	Component					
	1	2	3	4	5	6
Continue1	.015	.124	-.363	**.867**	-.075	.065
Continue2	-.045	.178	-.288	**.897**	-.002	.036
$MRR_{mc}1$	.054	.034	**.796**	-.164	-.013	-.018
$MRR_{mc}2$	.077	-.117	**.770**	-.145	-.147	-.111
$MRR_{mc}3$	-.019	-.009	**.844**	-.306	.146	-.057
$OrgPower_{mc}1$	**.903**	-.008	-.105	-.023	.050	-.117
$OrgPower_{mc}2$	**.930**	-.018	.163	-.005	-.015	.098
$OrgPower_{mc}3$	**.883**	-.074	.137	-.011	-.031	.127
$OrgPower_{mc}4$	**.931**	.021	-.046	-.004	.028	-.080
Gender	.050	.242	-.025	-.067	**.935**	.034
RiskProp1	-.060	**.847**	.056	.195	.164	-.011
RiskProp2	-.024	**.820**	.085	.126	.070	.067
RiskProp3	-.160	**.738**	-.087	.045	.254	-.110
RiskProp4	.147	**.839**	-.063	-.038	-.108	-.083
WorkExp	.014	-.089	-.155	.074	.030	**.965**

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization.

The items in table 2-2 correlate higher with their own "construct" (factor) than they correlate with others (Shadish et al, 2002). The convergent and discriminant validity is confirmed in this table.

Manipulation Validity

In order to assess whether or not the treatments are effective as intended, we tested manipulation validity following the procedure as proposed by Straub et al, (2004). As part of our between-subject experiment design, we intentionally exposed subjects to different treatments in order to control that our manipulation check variables (MRRmc and OrgPowermc) sufficiently vary across treatment-groups. In table 2-3 we present the mean values of the manipulation check variables MRRmc and OrgPowermc for each of the four treatment conditions. As expected from our pre-tests, we find the variable MRRmc to be different in the MRR high (partner) and low (opponent) conditions, with

only minor movement on the OrgPower high and low conditions. And we find the variable OrgPowermc to be different on the OrgPower low and high conditions, without changing as the result of the MRR treatment conditions. This indicates that the treatments are effective in size and direction.

Table 2-3. Mean Values of MRRmc and OrgPowermc per treatment condition

	OrgPower low		OrgPower high			
MRR low (opponent)	MRR_{mc}	3.74(1.41)	MRR_{mc}	4.02(0.93)	MRR_{mc}	3.86 (1.22)
	$OrgPower_{mc}$	2.90(1.32)	$OrgPower_{mc}$	4.97(0.71)	$OrgPower_{mc}$	3.82 (1.50)
	N=21		N=17		N=37	
	N=21		N=16		N=38	
MRR high (partner)	MRR_{mc}	5.68(0.82)	MRR_{mc}	5.18(1.05)	MRR_{mc}	5.40 (0.98)
	$OrgPower_{mc}$	2.27(0.90)	$OrgPower_{mc}$	6.00(0.84)	$OrgPower_{mc}$	4.32 (2.06)
	N=18		N=23		N=41	
	N=18		N=22		N=40	
	MRR_{mc}	4.64 (1.52)	MRR_{mc}	4.70 (1.15)		
	$OrgPower_{mc}$	2.61 (1.17)	$OrgPower_{mc}$	5.55 (0.93)		
	N=39		N=39			

Table 2-4 shows the results of an MANOVA in which the treatment conditions are entered as independent variables and the MRRmc variable and OrgPowermc variable are considered to be the dependent variables. The table shows that the MRR treatments are highly significant (at .000) on their own MRRmc variable and that OrgPower is not significant (.349) at that variable. The table also shows that the OrgPower treatments are highly significant (at .000) on its own OrgPowermc variable and that the MRR treatments are not significant (.685) at that variable.

We consider the R2 of .319 and .698 to be acceptable as a result of the iterative testing and improving the treatment-conditions (and reducing background noise) in the scenario that was performed. We consider our manipulation tests to have sufficiently covered the testing techniques for manipulation validity as proposed by Straub et al, (2004).

Table 2-4. Manipulation Test 2x2 MANOVA

	Dependent variable MRR_{mc} [a]		Dependent Variable $OrgPower_{mc}$ [b]	
Independent variable	Type III Sum of Squares	F-Value (Sig)	Type III Sum of Squares	F-Value (Sig)
Main Effect MRR	44.293	35.779(.000)	.888	.888 (.349)
Main Effect OrgPower	.206	.166 (.685)	154.439	154.458(.000)
Interaction Effect MRR * OrgPower	2.692	2.174 (.145)	12.814	12.816 (.001)

a) R^2 is .319 and b). R^2 is 698

Regression Analysis on Main and Moderating Effects

In order to test whether moderation effects could be found, we followed procedures according to (Sharma et al, 1981). Additionally we used the operational guidance on multiple-regression of interaction effects as presented by Jaccard and Turrisi (2003) and Aiken and West (1991). Table 2-5 shows the results of the moderated regression analyses with Continue as the dependent variable. The presentation of moderation effects is adopted from Tanriverdi (2006).

Table 2-5. Moderated Regression Analysis on Continue

Variable(s) Entered	Model 1 Controls	Model 2 Main Effect	Model 3 Main Effect	Model 4 Interaction
Gender	-.154	-.152	-.100	-.077
WorkExp	.219	.219	.118	.114
RiskProp	.315**	.313*	.248*	.248*
OrgPower		-.016	-.003	.010
MRR			-.414***	-.424***
MRR x OrgPower				.207*
R^2	.121	.121	.279	.321
F	3.262	3.282	18.386	22.606
ΔR^2	.121	.000	.158	.042
ΔF	3.262*	.020	15.104***	4.220*

*+p<.1, *p<0.05, **p<0.01, ***p<0.001*
Dependent variable is Continue

For interpretation of the model, we first took into account the subjects of our study and the control variables. We found WorkExp not to be significant, where it was found to be significant in earlier studies (Cuellar et al, 2006; Cuellar et al, 2007). This could be explained by the low level and low variance in working experience of the subjects that participated in this experiment. The control variables Gender, WorkExp and RiskProp are presented in Model 1. Model 2 consists of the control variables of model 1, extended

with OrgPower. Model 2 does not confirm a significant negative influence of OrgPower on the decision to continue as was expected from earlier studies and hypothesized here as hypothesis 1. From model 3 we conclude that MRR has a significant negative effect on Continue, which confirms hypothesis 2.

In hypothesis 3 we proposed that the negative influence of MRR on Continue would be weaker in the high organization power domain and stronger in the low organization power domain. Therefore, we expect to find a significant positive regression coefficient for the interaction variable MRR x OrgPower in model 4. We found hypothesis 3 confirmed in table 2-5. According to the procedures of Sharma et al, (1981), we conclude that OrgPower is a moderator on the relationship between MRR and Continue, since it only acts as a moderator and it has no a direct effect on Continue.

For interpretation purposes we present the regression plots in figure 2-2 below. The figure shows the regression lines for the high and low values of organization power. The regression lines are not parallel, and do intersect within the range of treatment and measurement conditions we used in our experiment. Since the order of the two regression lines changes, this type of interaction is called "disordinal" (Jaccard and Turrisi, 2003, p.78).

The results of the moderation analysis show that the interaction effect between MRR and OrgPower is consistent with our expectations.

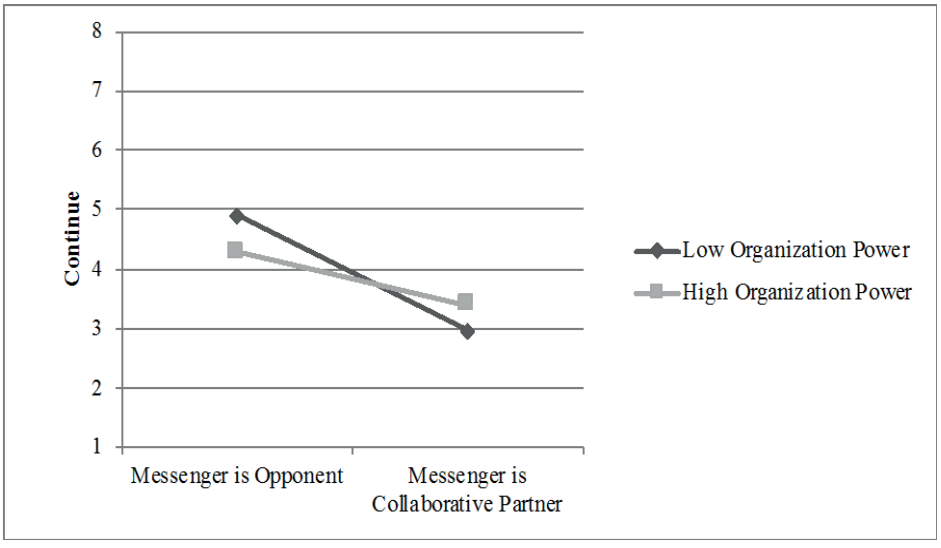

Figure 2-2. Regression plots with Organization Power as moderator

Figure 2-2 shows that the regression line in the high organization power conditions is more flat than in the low organization power conditions, which reflects the interaction effect as confirmed in hypothesis 3. The influence of MRR on the deaf effect is weaker in

conditions of low organization power and stronger in conditions of high organization power.

As indicated in this study, in the low organization power conditions, decision makers might show competitive arousal when the message comes from an opponent and they are more likely to continue the project and respond deaf to the risk warning. In the low organization power condition, the decision maker is still likely to listen to the risk warning if the messenger is seen as a collaborative partner. We expected that in the high organization power conditions decision makers are more likely to follow any advice, regardless whether the message comes from a collaborative partner or an opponent, however the results showed this is not the case. This is also shown in figure 2-2. We had expected to find an ordinal interaction in which the regression line that represents the high organization power conditions would remain below the regression line that represents the low organization power conditions. Interestingly, the two regression lines in figure 2-2 cross, which indicates that high organizational power through top management support not always helps to reduce the deaf effect. The left side of figure 2-2 shows that high organizational power through top management support is helpful to reduce the deaf effect when the messenger, i.e. the internal auditor, is seen as an opponent. The right side of figure shows that high organizational power through top management support is contra productive in case the messenger is seen as a collaborative partner, since it will increase the deaf effect instead of reducing it.

2.5 DISCUSSION

Before discussing the limitations of our study and the ideas for further research, we consider the main findings and the implications. The study's three main findings are:

(1) The continuation of a course of action (deaf response to a risk warning) is not significantly influenced by the organization power of the internal auditor. Based on literature we expected that high top management support would have a positive influence on internal audit effectiveness; however this is not always the case (H1 not confirmed in our experiment);

(2) The influence of MRR on the deaf effect is strengthened when the messenger has low organization power. When the messenger has low organization power, decision makers are more likely to let their continuation-decision be influenced by the messenger-recipient relationship, i.e. when the messenger is seen as a collaborative partner rather than an opponent.

(3) We expected that in the high organization power conditions decision makers are more likely to follow any advice, regardless whether the message comes from a collaborative partner or an opponent. However, the results of our study indicate that

high organization power of the internal auditor (through high top management support) is helpful and even necessary for reducing the deaf effect on risk warnings when the auditor is seen as an opponent. In the contrary, high organization power of the internal auditor (through high top management support) may be contra-productive and will not reduce the deaf effect on risk warnings when the auditor is seen as a collaborative partner.

This study is perhaps a first attempt to examine the deaf effect with moderation analysis providing an insight into the effects of the organization power of the internal auditor on deaf effect in the context of IT-projects. This study introduced and tested the effects of two variables – (1) the organization power of the internal auditor – on the decision to continue a course of action despite the risk warning – and (2) messenger-recipient relationship. The second construct had been recently tested by Nuijten et al, (2016) in the context of the deaf effect. The first construct had not been tested in the context of the deaf effect earlier. The question of whether the messenger is seen as a collaborative partner or as an opponent highly influenced the continuation decision (deaf effect) of the decision maker. The construct on the messenger-recipient relationship was derived from stewardship theory and our results were consistent with expectations according to stewardship theory. We contribute to research on stewardship theory by providing stronger evidence for the impact of MRR on the deaf effect and further testing it at a micro inter-personal level between the internal auditor and senior management.

The organization power of the internal auditor through top management support did not appear to have a main effect on the continuation decision in a way that was expected from whistle-blowing theory. As expected, the organization power through top management support for internal audit turned out to be a strong moderator for the MRR in the proposed direction, but it did not turn to have a significant main effect on the continuation decision (H1 was not confirmed). This might be explained by our finding that high organization power of the internal auditor who is seen as a collaborative partner may have a contra productive effect on the decision to continue a course of action.

In this study we confirmed that decision makers are less likely to turn a deaf effect to risk warnings, when the messenger is seen as a collaborative partner. Additional practical implication of this study is that the organization power of the internal audit function plays a role in the MRR relationship on the deaf effect. This includes the level of support the internal auditor receives from top management. Although one may think the hypotheses in our experiment were not difficult to predict, yet our results were surprising and brought originality in this area of academic research. More specifically, our experiment found empirical support for the moderating role of the decision maker's organization power on the relationship between MRR and the deaf effect. When the internal auditor is seen as an opponent and has a high organization power through top management support, the decision makers will tend to turn less deaf ear to the risk

warnings of the internal auditor who therefore will be more effective. While it may seem to be logical that in the high organization power conditions decision makers are more likely to follow any advice, regardless whether the message comes from a collaborative partner or an opponent, this study suggests that the advantage of high organization power does not always reduce the deaf effect and can be even contra productive in case the internal auditor is seen as a collaborative partner. Our study provides evidence that high organization power through high top management support is helpful and even necessary for reducing the deaf effect on risk warnings when the internal auditor is seen as an opponent.

Knowing how the opponent and collaborative partner role interact with organization power of the internal auditor and the effects thereof on deaf effect, the internal auditor could consider switching between these two roles to reduce deaf effect on the risk warnings and hence increase internal audit effectiveness. The results of our study could help internal auditors to upgrade the internal audit profession by improving their skills and expertise enabling them deploying these two roles in communication of the risk warnings more effectively. We support other researches to further explore this challenging area of internal audit effectiveness.

Limitations and further research

Our study has several limitations. It is possible that the results would be different in other settings as there are other organizational and political factors that may also affect managers' deaf effect responses to risk warnings. Therefore, any generalization of the findings of this study to other settings should be treated with caution.

The experiment conducted in this study allowed us to achieve high internal validity and therefore it took a necessarily narrow focus and small number of variables so as to achieve a high degree of control over extraneous variables. The use of post-graduate student participants could also restrict external validity of our results. Although the use of students for this experiment we justify by aiming to generalize our conclusions to theory and not to particular population, for further research we need to replicate the organization power part of the experiment in different experimental conditions with more experienced participants as well.

Our measures of the OrgPower construct in the context of internal auditor – manager relationship were self-developed given our particular level (inter personal) and context. Although they were derived from literature, tested and improved in the preparations of this study and shared with experts, they ask for more refinement and testing in further research.

In our study we focus on the deaf effect at the level of the internal auditor as provider of an objective assessment and the decision taker's view on the messenger (as a collaborative partner or an opponent) as a determinant. This inter-personal view is only

one level in the corporate governance framework implementation following stewardship theory principles. We did not study the possible effects at a department-level or at an organizational corporate governance level and we recommend to examine these in future research. Despite the above limitations, this study shows the importance and relevance of a scientific examination of internal audit effectiveness and the deaf effect as one of its determinants. To our knowledge, only a few academic studies have examined the role of the organization power (through top management support) of the internal auditor in the effectiveness of internal audit, and even fewer have researched this issue empirically.

In our study we operationalized organizational power through top management support following the line of reasoning from whistle-blowing theory. Although internal audit literature confirms that top management support is a highly relevant way to obtain organizational power, we should realize that internal auditors might also find other ways to build organization power, for example through highly recognized expertise. Our results not necessarily apply to the full spectrum of different ways to obtain organization power and future research on this topic is highly recommended.

Finally, we realize that our manipulation of high organization power through top management support may put the spotlight on the negative repercussions if managers in the organization would ignore the risk warning of the internal auditor. As we know from framing literature, such framing in terms of losses might influence decision makers' risk taking preferences and thus could influence their decisions to continue a course of action despite the risk warning of the internal auditor. For that reason, it may be interesting to pursue future research on top management support that puts a spotlight on the positive side and gains in case decision makers would implement audit recommendations.

To our knowledge, our study is the first to identify this finding and we recommend challenging it in further research. For example, one could explore more in detail what constitutes effective top management support, how much it would be enough, when it could be excessive and inappropriate and what are its effects on the relation between the messenger and the recipient on a long run. Furthermore, student subjects with more work experience or managers from the field could be considered in a follow up study.

APPENDIX 1.

SCENARIO (Experiment)

Imagine that you are the Senior Vice President of the Pensions Operations department within a large insurance company. You inherited a prestigious IS-project called PENSION-VIEW. As **Project Owner**, **you** became responsible for the successful implementation of PENSION-VIEW and for realizing the benefits for your organization with this in-house developed system.

With this IS-project you could be the first insurance company in the market that grants all citizens (customers and potential customers) access to the complete set of their personal pension information. If your insurance company is the first in the market to provide this service at a reliable level, the expected gain to your company would be 60 million euros, as documented in a detailed business case for the project.

Your main competitors have all decided to wait for the supplier of a standard software-package to provide a module to the insurance-market that integrates and presents their pension data. If your implementation is too late or does not prove reliable during the first month of operations, you will miss your competitive advantage and your organization will gain nothing.

The main challenge and risk of the PENSION-VIEW project are the large number of interfaces to retrieve reliable information from other information systems that contain pension data.

Your PENSION-VIEW project is close to implementation and under time-pressure to continue implementation as planned.

According to standard procedures, Mr. Johnson of the Internal Audit department has recently reviewed the testing-procedures of your project.

Mr. Johnson reports that he has found serious weaknesses in the design and execution of the testing activities on the data exchange with other information systems.

As a consequence, he reports that the project should be redirected and should not be continued as planned.

Scenario 1 (positive manipulation) ***(OrgPower = High):*** Within the company, internal auditors receive an enormous support by the Executive Board of the company. Strong top management support is shown by the fact that Executive Board pays great attention on implementing audit recommendations by project owners and even follows up personally on that. As a consequence, Mr. Johnson in his role as an internal auditor has a very **STRONG ORGANIZATION POWER** within the company.

Mr. Johnson has a long history of working **COLLABORATIVELY** with IS project teams with the goal of helping to identify and manage project risks, thus enabling project

owners to be successful. He is seen by the project management as adding value to the process. Thus, Mr. Johnson is treated as a **TRUSTED PARTNER** to management.

Scenario 2 (negative manipulation) ***(OrgPower = Low)***: Within the company, internal auditors receive a very poor support by the Executive Board of the Bank. Poor top management support is shown by the fact that Executive Board does **NOT** pay attention to implementing audit recommendations by project owners and does **NOT** follow up on that in any fashion. As a consequence, Mr. Johnson in his role as an internal auditor has a very **LOW ORGANIZATION POWER** within the company.

Mr. Johnson has a long history of working **AGAINST** IS project teams with the goal of exposing project failings, thus embarrassing project owners. He is seen as policeman who does not add any value to the development process. Thus, Mr. Johnson is treated as an **OPPONENT WHO IS NOT TO BE TRUSTED**.

Scenario 3 (positive manipulation) ***(OrgPower = High):*** Within the company, internal auditors receive an enormous support by the Executive Board of the Bank Strong top management support is shown by the fact that Executive Board pays great attention on implementing audit recommendations by project owners and even follows up personally on that. As a consequence, Mr. Johnson in his role as an internal auditor has a very **STRONG ORGANIZATION POWER** within the company.

Mr. Johnson has a long history of working **AGAINST** IS project teams with the goal of exposing project failings, thus embarrassing project owners. He is seen as policeman who does not add any value to the development process. Thus, Mr. Johnson is treated as an **OPPONENT WHO IS NOT TO BE TRUSTED**.

Scenario 4 (negative manipulation) ***(OrgPower = Low)***: Within the company, internal auditors receive a very poor support by the Executive Board of the Bank. Poor top management support is shown by the fact that Executive Board does **NOT** pay attention to implementing audit recommendations by project owners and does **NOT** follow up on that in any fashion. As a consequence, Mr. Johnson in his role as an internal auditor has a very **LOW ORGANIZATION POWER** within the company.

Mr. Johnson has a long history of working **COLLABORATIVELY** with IS project teams with the goal of helping to identify and manage project risks, thus enabling project owners to be successful. He is seen by the project management as adding value to the process. Thus, Mr. Johnson is treated as a **TRUSTED PARTNER** to management.

As you left the meeting room, you saw two courses of action. You could decide to redirect the project (thus, not continue as planned). Or, you could decide to continue (thus, move the system into production as planned).
You must decide which of the two courses of action to take.

MEASURES

Continue (dependent variable)

Variable	Item Wording
Continue1	(1=Definitely Redirect; 8=Definitely Continue) Indicate whether you would decide to continue the project as planned or redirect, and how strong your leaning would be
Continue2	(1=Strongly Disagree; 7=Strongly Agree) I will certainly continue the PENSION-VIEW project as planned (i.e., without redirection)

MRR (independent variable)

Variable	
MRR	(1=Collaborative partner; 0=Opponent)

OrgPower (moderator variable)

Variable	
OrgPower	(1=High Organization Power; 0=Low Organization Power)

MRR_{mc} (used as a manipulation check)

Variable	(Anchors), Item Wording
$MRR_{mc}1$	(1=Strongly Disagree; 7=Strongly Agree) I consider Mr. Johnson to be a trusted partner to my PENSION-VIEW project
$MRR_{mc}2$	(1=Strongly Disagree; 7=Strongly Agree) I consider Mr. Johnson to be a collaborative partner to my PENSION-VIEW project
$MRR_{mc}3$	(1=Non-Trusted Opponent; 7=Trusted Partner) I consider Mr. Johnson to be a _____ to my PENSION-VIEW project

$OrgPower_{mc}$ (used as a manipulation check)

Variable	(Anchors), Item Wording
$OrgPower_{mc}1$	(1=Strongly Disagree; 7=Strongly Agree) Mr. Johnson has a high organization power within the company
$OrgPower_{mc}2$	(1=Strongly Disagree; 7=Strongly Agree) Mr. Johnson is highly supported by executives in the company
$OrgPower_{mc}3$	(1=Strongly Disagree; 7=Strongly Agree) Mr. Johnson is poorly supported by executives in the company
$OrgPower_{mc}4$	(1=Low Organization Power; 7=High Organization Power) Mr. Johnson has a _____ organization power in the company

Risk Propensity (used as a control variable)

Variable	Item Wording (Anchors: 1=Extremely LESS likely than others; 7=Extremely MORE likely than others)
RiskProp1	Your tendency to choose risky alternatives based on the assessment of other people on whom you must rely
RiskProp2	Your tendency to choose risky alternatives relying on an assessment that is high in technical complexity
RiskProp3	Your tendency to choose risky alternatives which could have major impact on the strategic direction of your organization
RiskProp4	Your tendency to choose risky alternatives despite considerable failures in risky choices you made in the past