# Employee Perceived Effect of Leadership Training:

# Comparing Public and Private Organizations

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Leadership is considered an essential element in the success of organizations whether in the public sector (Rourke 1984; Van Wart 2013) or the private sector (Barnard 1938; Meindl and Ehrlich 1987; Antonakis and House 2014). Among leadership's crucial functions is the need to entice organizational employees to modify their personal goals and accept the goals of the organization in case these are not aligned. Leaders seek to create a balance between the inducements the organization provides and the contributions it receives from its employees (Barnard 1938; Simon 1947). Inducements can take a variety of forms: utilitarian incentives, normative appeals (e.g. task significance and social impact), solidary benefits from association, and even coercion in some organizations (see Clark and Wilson 1961; Etzioni 1965; Knoke 1988; Grant 2007, 2008; Bellé 2014; Stritch and Christensen 2014). The combinations of incentives play a major role for leadership behavior with different strategies stressing different types of incentives to gain employee contributions.

A large body of leadership literature investigates different types of leadership behaviors meant to motivate employees and increase goal attainment. Among the most researched leadership strategies in the generic leadership literature (Judge & Piccolo, 2004; Dinh et al. 2014) as well as in public administration research (Vogel & Masal, 2015) is transformational leadership. Transformational leadership, together with transactional leadership, is the active component of what is referred to as the "full-range leadership theory." Different mechanisms are used in transformational and transactional leadership strategies: Transactional leadership relies on more utilitarian inducements (rewards and sanctions) while transformational leadership uses more normative appeals by creating a shared vision for the organization (see Bass 1985; 1990; Burns 1978; Rainey 2014). Both types of leadership behavior have been related to employee well-being and performance in multiple studies (Lowe, Kroeck & Sivasubramaniam, 1996). For this key reason our experimental study focuses on transformational and transactional leadership rather than other types of leadership. We seek to determine how these types of leadership behavior can be learned through training (Van Wart 2013: 533; Avolio et al. 2009). Because our subjects are actual public

and private sector managers, using leadership styles documented as linked to organizational performance, therefore, is the best way to examine some of important unanswered questions concerning whether leadership training will have an equally strong positive effect on leadership behaviors (as perceived by the employees) in publicly and privately owned organizations.

In the extensive scholarly literature on leadership as well as leadership training, the distinction between public and private organizations is rarely made. Both the literature and a large practical industry devoted to leadership training appears to assume that leadership training and the benefits of leadership training are not sector specific. What will work in the private sector will work in the public sector even though individuals with different values clearly self-select whether to work for government or business (see Donahue and Zeckhauser 2011; Lewis and Ng 2013; Van der Wal et al. 2008) and even though the array of incentives available to public and private managers often has substantial differences (Downs 1967; Wittmer 1991). This article adds to the important research on leadership training by reporting on a randomized field experiment on leadership training in Denmark to determine if exposure to leadership training – both transformational, transactional and a combination thereof – will have equally strong positive effects on the employees' perception of their leader as more active in the intended/trained direction in publicly and privately owned organizations. Given that both types of organizations invest numerous resources on leadership training, the effectiveness of leadership training on improving leadership behaviors in public and private organizations is an important management as well as research question (Seidle et al. 2016).

The goal of this article is to assess whether experimentally induced leadership training would increase the use of leadership behaviors by leaders (as observed by their employees) and how the effectiveness of leadership training would differ between public and private organizations. We focus on leadership behaviors as observed by the leader's employees, because the leadership literature highlights the importance of distinguishing between a leader's self-reports and employees' reports about a leader's behavior (Fleenor et al. 2010). There are at least two arguments for measuring the effects of leadership training as perceived by leader's employees: First, leaders tend to overrate their use of socially desirable

3

leadership strategies (Podsakoff & Organ 1986). Second, leadership behavior has to be perceived by the employees in order to affect employee behavior and performance (Jacobsen & Andersen 2015).

The analysis begins with a discussion of transformational and transactional leadership, which is followed by theoretical reasons why managers in different sectors might be more amenable to adopt one type of leadership behavior or another. We will then introduce our field experiment involving 506 randomly assigned managers in both the public and private sectors followed by a discussion of the reliability and validity of the measures we use. Before and after randomly assigned leaders receive the training, we specifically ask followers to rate their leaders' leadership behaviors. Using a difference in differences analysis of the experimental results, transformational leadership training appears to change leader behavior only in the public sector; transformational leadership training is effective in improving leader behavior in the private sector only if it is combined with transactional leadership training. When transactional leadership training is used by itself (without any transformational leadership training), the effect of the training on employees' perception of their leader's behavior is the same in either sector.

**Leadership**

Leadership is one of social science's most examined phenomena (Day and Antonakis 2012). The scientific study of leadership dates back to the turn of the 20th century with the "great man" or trait-based perspective. This early leadership research focused on individual traits including skills, demographic characteristics, and personality features (Judge et al., 2002; Derue et al. 2011) that are commonly found among effective leaders. This trait-based perspective has later been criticized by scholars who paid attention to leaders' behaviors rather than their traits (Jenkins 1947; Derue et al. 2011). The literature on transformational and transactional leadership is part of this behavioral perspective (Derue et al. 2011). Especially the work of Bass (e.g. Bass 1985; Bass and Avolio 1994) promoted transformational leadership and reignited the interest in leadership in general at a time where leadership research was beginning to lack theoretical advances (Day and Antonakis 2012).

Although the ideas underlying transformational leadership have a long history that dates back to the work of Barnard (1938) and the 1920s Hawthorne experiments (Roethlisberger and Dickson 1939),

the term was coined by a political scientist studying the leadership styles of U.S. presidents (Burns 1978). Subsequent work by Bass (1985) and others defined the elements of transformational leadership in contrast to what was perceived as the more common form of transactional leadership. Transactional leaders motivate their employees by recognizing the array of values and needs of their employees and providing incentives that link to these needs and values in exchange for performing the tasks that the organization needs (see Rainey 2014). Although transactional leadership can be caricatured as focused solely on monetary incentives, that view is incorrect since the transactions might well include verbal rewards, creation of enlarged, more interesting jobs and other non-pecuniary job aspects.

Transformational leadership's distinguishing characteristic is the effort to build a shared organizational vision, often linked to higher level goals that might benefit the community or the polity. The logic of this approach is rooted in motivation theories that suggest that monetary incentives and individual level incentives have limits as motivational tools (Herzberg 1966; Maslow 1943). The basic concept is that leaders will transform employees and motivate them to achieve higher order needs by working toward organizational goals.

Although generally presented as contrasts, transformational leadership and transactional leadership have substantial overlap. Both approaches stress the need for leaders to enunciate clear goals (often challenging but achievable goals, see Latham and Locke 1991), provide constructive feedback to employees, and build an environment of trust by making credible commitments to employees in exchange for better performance (see Favero et al. 2015). Bass (1990) clearly incorporates elements of transactional leadership in his discussions of transformational leadership, and his work might be interpreted as advocating transformational leadership as a method of augmenting transactional leadership. The augmentation effect (Bass 1985) thus stipulates that transformational leadership adds to the effect of transactional leadership; and although this augmentation is often discussed, it is little tested (Judge and Piccolo 2004). This overlap in the practice of transformational and transaction leaders has implications for the study of leadership. Studies thus need to analyze what both types of leadership behavior have in common as well as the differences between the two approaches.

5

Until recently, the assessment of transformational and transactional leadership was widely conducted with the Multifactor Leadership Questionnaire (MLQ). Critical voices in generic leadership research, however, have expressed major concerns about both the conceptualization and the associated measure, MLQ. The main points of critique are that the conceptualization confounds the definitions of the leadership strategies with their effects (Van Knippenberg & Sitkin 2013; Yukl 1999; Judge and Piccolo 2004) and that the dimensions of transformational and transactional leadership are not exhaustively theorized (Van Knippenberg and Sitkin 2013). Consequently, we rely on the work by Jensen et al. (2016) which has reconceptualized transformational and transactional leadership and developed and tested measures, which are applicable to public and private organizations. Specifically, transformational leadership is behaviors that seek to develop, share, and sustain a vision, while transactional leadership is the use of contingent rewards and sanctions (Jensen et al. 2016).

**Leadership in Public and Private Organizations**

Theoretical work on transformational and transactional leadership generally does not recognize the distinction between public and private organizations. In part this reflects the general nature of leadership theory, but it also reflects both practice and academic scholarship. The theory is general enough to apply to any organization where either incentives are used to gain employee contributions or a vision for an organization can be constructed, and those criteria apply to both public and private organizations. Although there are several studies that examine leadership differences in public and private organizations (see Lowe et al. 1996), the leadership training literature tends to focus on either public or private organizations (Seidle et al. 2016; Dvir et al. 2002; Kelloway, Barling, and Helleur 2000). There is only one experimental study examining whether transformational leadership training is equally effective in both sectors. Parry and Sinha (2005) conclude that there is no difference in the efficacy of transformational training in public or private organizations. The small sample of leaders (n =50) and thus the lack of discriminating power of the statistical tests, however, suggest that this Australian study is not

the last word on the topic.

Leadership training does not operate on a tabula rosa but rather takes managers, often with extensive experience, and subjects them to training. In part, leadership training seeks to overcome some prior predispositions of managers and reinforce others. At least two reasons suggest that transformational and transactional leadership training might be more effective in one sector rather than the other – there is substantial selection bias by individuals and organizations in terms of who is hired in public versus private organizations *and* the managerial instruments available to leaders generally differ, often substantially, between the two sectors.

Labor markets are hardly random; both employees and employers have preferences that each seeks to maximize in the hiring process. Employees have perceptions of what might be the ideal job or the job that their education and training best prepares them to undertake. For employers, selection bias is the *sine qua non* of human resources policy as the organization seeks individuals who will fit with the organization and can be transformed into productive assets. Substantial evidence indicates that these dual preferences generate differences between public and private employees and managers that relate directly to leadership behaviors. Public employees are more likely than private employees to have higher levels of public service motivation, a psychological construct that links to desire for public service, an interest in helping others, and altruism (Vandenabeele 2008). Similarly, government programs tend to appeal to the normative values held by some individuals; as an example environmental protection advocates are more likely to work for a government agency charged with protecting the environment than a private business, all things being equal. Studies in a wide variety of countries have shown public employees to be distinct from private sector employees in terms of being less affected by extrinsic motivation (Buelens and Van den Broeck 2007), greater attachment to public service motivation (Bullock, Stritch, and Rainey 2015), and lower concerns about high income levels (Bullock, Stritch and Rainey 2015).

Public sector managers are also more limited than private sector managers in the managerial actions that they can take to manage people and programs. Pay systems and collective labor agreements are for example less flexible (Bach and Bordogna 2013; Hansen & Mailand 2013). These differences, in

7

fact, provide some of the motivation for the New Public Management reforms that seek to augment to the authority of public sector managers (Pollitt and Bourkaert 2004). Atwater and Wright (2007) find that public managers have less control over rewards for employees than private sector managers, and that public leaders were more likely to be perceived as inspirational by employees (see also Andersen 2010). Hansen and Villadsen (2010) attribute differences in public and private sector management to the different organizational contexts which generate greater participative leadership in the public sector. Wright (2007) finds a positive correlation between public service motivation and the use of transformational leadership in the public sector (see also Wright, Moynihan and Pandey 2012). In an extensive meta-analysis, Lowe, Kroeck and Sivasubramaniam (1996) conclude that transformational leadership is more common in the public sector. In a meta-analytic test of the relative validity of transformational and transactional leadership, Judge and Piccolo (2004) find that the validity of transformational leadership appears to generalize across their four study settings (business, college, military and public sector), but contingent reward worked best in business settings. They attribute this finding to the resource dependent nature of contingent reward leadership and that business leaders do not have the same limitations as in the public sector in terms of rewarding employees in exchange for effort.

The literature clearly indicates that the tools of public managers are more limited than those of private sector managers; and as a result, they need to rely more on normative appeals and creating a vision for the organization than on monetary incentives. These normative means include, but are not limited to, paying attention to the social impact of the task (an employee's feeling that they benefit others and society) and emphasizing the job significance (Bellé 2014; Grant 2007, 2008; Stritch and Christensen 2014; Van Loon et al. 2016). Public managers frequently cannot reward employees with higher salaries and face greater limits in disciplining or terminating employees. Similarly, the employees attracted to public service are more receptive to the normative appeals identified above. Logically then, leadership training should be more effective in changing the manager's behavior as seen by the employees in areas where there is a more receptive environment among leaders and employees, hence:

H1: The positive effect of transformational leadership training on managers' transformational leadership behavior is larger in public organizations compared to private organizations.

H2: The positive effect of transactional leadership training on managers' transactional leadership behavior is larger in private organizations compared to public organizations.

Because both transformational leadership and transactional leadership are well known approaches and because our experiment involves experienced managers, it is possible that managers could have well developed leadership strategies before any of the training. This suggests that if leaders have established their leadership behavior before the training, leadership training will have a reduced impact on improving leadership; the rates of positive training effects will start diminishing depending on the prior level of existing transformational or transactional behaviors.

This logic suggests that improvements in terms of employees seeing the managers as more active after the leadership training will be greater in the sector where the leadership behavior is not as common or not as consistent with levels of pre-existing leadership behaviors. Transformational leadership in the public sector might thus be at a level before the leadership training where diminishing marginal returns is a serious issue, and the training effect might decrease more with increasing levels of initial transformational leadership, because public leaders have already (before the training) used the receptive environment to make their leadership behavior transformational. Contrary to hypothesis 1, this might ultimately imply that transformational leadership training is less effective in changing behavior in public organizations compared to private organizations. A similar logic applies to transactional leadership training in the private sector where the initial level of transactional leadership is expected to higher than in the public sector. Two diminishing marginal returns hypotheses are, therefore, possible:

H3. The effect of transformational leadership training will decrease more with higher initial levels of transformational leadership in public organizations than in private organizations.

H4. The effect of transactional leadership training will decrease more with higher initial levels of

transactional leadership in private organizations than in public organizations.

**Methods**

To examine the role of leadership in public and private organizations, several methodological challenges need to be addressed. First, the literature clearly demonstrates that organizational context and mission are related to the ability to use transformational leadership (Wright 2007; Wright, Moynihan and Pandey 2012). Transformational leadership is clearly easier to use when the organization's mission is important and meaningful. This indicates that the public and private managers examined should manage organizations that have similar or even identical functions. To control for mission and function, sets of public and private organizations were matched with similar functions. A total of 506 managers from public and private primary and lower secondary schools, public and private day care centers, and private banks and public tax collection offices completed the experiment.[1] For schools and daycare centers, the functions performed are identical; the match between banks and tax collection offices brings similar skills and financial functions.

Second, all managers are likely to have at least the rudiments of a leadership behavior that results from their prior training and experiences. These types of behaviors are likely to overlap with transformational and transactional leadership as defined in the literature, but they are also equally likely to combine elements of these strategies with a variety of unrelated behaviors. Controlling for such pre-existing attitudes and behaviors calls for a design that both compares changes in leadership behavior between public and private organizations after the experimental intervention relative to a control group and includes the initial level of the relevant leadership behaviors.

Third, managers are quite likely to over-estimate their leadership behavior. In a study of 155 U.S. Navy surface fleet officers, Bass and Yammarino (1991) found that the self-ratings of leadership behavior tended to be inflated in comparison to subordinates' ratings. The self-other rating agreement literature

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[1] A group of upper secondary school principals also participated in the study, but these were all from public schools. Because there were no private sector comparisons for this group, they are not included in the analysis. Only managers with direct responsibility for employees without leadership responsibilities are included (excluding day care leaders of other day care leaders).

emphasizes that the use of self-ratings of leadership is problematic (Fleenor et al. 2010), which has led to a tradition of using others' ratings of leadership (see for example Trottier et al. 2008 and Wright et al. 2012) as a more accurate way to measure leadership (Antonakis and House 2014; Podsakoff and Organ 1986). Furthermore, either through prior education and training or through outside reading, managers should be well aware of transformational and transactional leadership. The generally positive literature on these topics implies that social desirability could play a role in leaders' responses to questions about their behavior. Thus, to avoid this problem, and measure leadership more accurately, we opted to measure leadership behavior by asking the leaders' employees about the leaders' behavior. The validity of using employee assessments of leadership behavior has been demonstrated both by field studies of public management (Favero et al. 2015; Jacobsen and Andersen 2015) and in experimental studies (Dvir et al. 2002; Kelloway, Barling, and Helleur 2000).

**The Organizations**

Leaders from six different types of organizations are included in this study – public primary and lower secondary schools, private primary and lower secondary schools, public daycare centers, private daycare centers, public tax offices, and private bank offices. The selection of the organizations was designed to provide a range of functions and missions from social welfare (schools and daycare) to finance (tax and banks). Because mission is frequently linked to leadership, being able to compare public and private organizations engaging in similar functions (schools, daycare and finance) enhances comparability across sectors.

This study uses the ownership definition of public and private organizations. Existing classifications of publicness also include the degree of government funding, the extent of government regulation, or whether the organization serves a public purpose (Bozeman 1987). Using broader definitions of publicness, the groups of organizations all have some characteristics of public organizations. The private primary schools are funded by government at 75% of the rate of public schools and collect additional fees from parents (Danish Ministry for Children, Education and Gender Equality

11

2015a). Both public and private daycare centers are funded through a combination of public funds and user fees (Danish Ministry for Children, Education and Gender Equality 2015b). In terms of regulation, even the most private of the organizations, banks, are subject to substantial government regulation (for an overview, see Finansiel Stabilitet 2015).

Despite the mixing of public and private funds and the regulation of all the organizations, the publicly owned organizations are distinct from the privately owned organizations in both the degree of direct government control and in the restrictions on managerial actions in terms of personnel management. All the publicly owned organizations are part of a government structure that provides some oversight, however indirect, of a body of elected officials (municipal government for day care and schools and the Danish parliament for tax). The publicly owned organizations are also more limited in hiring, compensating, and terminating employees than the privately owned organizations are. Defining public organizations as being publicly owned and private organizations as being privately owned may thus make our test more conservative, but sector differences are still plausible.

**The Experiment**

A total of 506 managers participated in the study; the managers were informed that this was an experimental study and that they had a 75% chance of receiving one year of leadership training that was equivalent to an executive master course in Denmark. The leadership training included the elements recommended by leadership training literature (e.g. Seidle et al. 2013; McCall 2010; Day 2013) such as classroom education, coaching, feedback and training in applying leadership principles on the participants' own organizations. The managers were randomly assigned to three treatment groups – a transformational leadership training program, a transactional leadership program, a combined transformational and transactional leadership program - and a control group. We used strata to ensure an even representation of leaders from all types of organizations in all the training programs and control group. Based on the managers' geographical workplace location, the three experimental groups were each distributed into seven classes with 15-25 participants (resulting in a total of 21 classes). Four teachers (professors in economics, public administration and organizational behavior) were randomly assigned to

classes with each class having all sessions taught by the same instructor. Each teacher taught classes from all programs. The two public administration teachers each taught two classes from all programs, the organizational behavior teacher taught the same although only one class from the transactional training program. The teacher from economics taught two transactional classes and one of each of the other training classes. The training effects do not differ systematically between the teachers (identifying reference omitted). The training modules consisted of four seven-hour classes over a period of one year based on a 600 page curriculum and course work between meetings. The leaders' employees were asked to evaluate the leadership behavior of their leader both before and after the experimental treatment. We limit our analysis to employees who rated their leader both before and after the training to control for any individual characteristics that could affect the ratings.

Comparisons are consistently made between the participants who received a given type of training and the control group. One might argue that the treatment groups could serve as control groups or quasi-control groups for each other, that is, the transactional leadership group could be added to the control group when we analyze the effect of transformational leadership training and oppositely. In our study, we opt not to do so because transformational leadership and transactional leadership have some overlap both theoretically and empirically. Both try to make employees follow a set of clear goals; and verbal appreciation can be interpreted as conditional verbal rewards (a transactional logic) or as a transformational leader's effort to highlight how employees contribute to the desirable future depicted in the vision. These overlaps could potentially limit the distinctiveness of the control group and bias our results.

**The Dependent Variables**

Three dependent variables will be used in the analysis – a measure of transformational leadership, a measure of the use of verbal appreciation, and a measure of the use of pecuniary rewards. Transformational leadership was assessed with four Likert scale items that were included in questionnaires to the participating leaders' employees before and after the leadership training. The four

questions asked about the leaders creating a clear vision for the future, getting employees to accept common goals, seeking to encourage employees to work together, and clarifying how employees can contribute to organization goals. The four items all loaded on a single factor with correlations between 0.86 and 0.90 with a Cronbach's alpha of 0.89 (see appendix table 1).

The use of the verbal appreciation by leaders of their employees' efforts and results can be considered an element of both transformational leadership and transactional leadership. Three Likert scale items measured the use of verbal appreciation based on using such rewards when employees live up to requirements, using the rewards based on employee performance, and letting employee effort determine rewards. The three items loaded strongly on a single factor with correlations between 0.92 and 0.95 with a Cronbach's alpha of 0.93.

The use of pecuniary rewards, a component of transactional leadership, was measured by three Likert scale items that linked pecuniary rewards to employees meeting requirements, employee performance, and the leaders tying promises of pecuniary rewards to future performance. The three items correlated with a single factor between 0.84 and 0.92 with a Cronbach's alpha of 0.88.

Confirmatory factor analysis (see identifying reference 1) shows both strong convergent validity of the measures and also discriminant validity between the measures. Measures of the same concept cluster closely with each other and are less correlated with the other measures. The analysis uses an additive scale of the three measures with the metric of the scale changed so that it ranges between 0 and 100. This transformation permits the comparison of scales with a different number of items. A total of 3,269 employees rated their managers in this study both before and after the training.

## Findings

The experimental design provides three different treatment groups – transformational leadership training, transactional leadership training, and combined leadership training – all that should be compared to the control group that received no leadership training. Our strategy of analysis will be to present four regressions for each dependent variable. The first will include just the experimental treatment effects, the second will control for whether or not the organizations are public, the third will interact the treatment

effects by sector to determine if leadership training has a different impact in the public sector compared to the private sector, and the final regression will control for absences from the training sessions and potential selection effects in choice of sector employment by using the pre-treatment leadership value.[2]

Table 1 presents the results for transformational leadership training using the change in transformational leadership as the dependent variable.[3] Both transformational leadership training and combined leadership training are associated with a positive increase in employee perceived transformational leadership (Model 1). The relative impacts for the two are essentially the same magnitude. Model 2 shows that perceived changes in transformational leadership are greater in public organizations than in private organizations, a finding consistent with the contention that public sector employees would be more sensitive to transformational leadership training (hypothesis 1). The interaction effects in Model 3 are designed to determine if leadership training is more effective in one sector than another. To illustrate using the combined training treatment, the coefficient for the training is 5.242 which should be interpreted as the treatment effect for the private sector (the public dummy and the interaction effects would equal zero for public organizations), an impact that is statistically different from zero. The coefficient for the interaction of combined treatment and public sector (-1.047) is the difference in impact in the public sector compared to the private sector, or approximately one point, a difference that is not statistically significant.[4] The conclusion is that combined leadership training is equally effective in the public and private sectors.

[Table 1 about here]

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[2] The relationship between absences and the impact of training is not strictly linear. There is a negative impact (that is, less effective training) when there are two or more absences.

[3] Only those employees who answered both pre and post surveys are included in the analysis. Approximately 20% of employees did not fill out of the post survey; in some cases these individuals were no longer working for the organization. The individuals who only filled out the pre-survey were more negative in their assessments of leadership, but the standard deviations were similar. The use of only employees who filled out both surveys, therefore, might under estimate the impact of leadership training.

[4] Our hypotheses focus on the difference in training impact in the public and private sector so our interpretation will stress this difference. One can also compare the overall training effect in the sectors to zero or no impact or sum the total impact in the sector by including the various components. For example in this this case, the total impact in the public sector is the sum of the private treatment impact (5.242), the interaction effect (-1.047) and the public sector dummy (1.905) or 6.1 (which is also significantly different from zero).

The transformational leadership only training experiment shows a mean treatment effect in the private sector of 0.696, an insignificant result. The public sector treatment effect is 4.833 (or 0.696 + 4.137), but the difference between the public sector and the private sector are not statistically different from each other (t = 1.53, p = 0.128, two tailed). At the same time, the public sector treatment value of 4.833 is statistically different from zero at the 0.05 level (t = 2.14, p = 0.035). This would indicate that transformational leadership training is effective in the public sector. Model 4 brings greater clarity to the experimental results with the addition of pretraining transformational leadership scores. The negative coefficient for pretraining leadership clearly indicates that individuals who have already adopted a transformational leadership approach gain less from additional transformational leadership training than those who are not transformational leaders initially. When the analysis controls for the preexisting level of transformational leadership, it clearly indicates that transformational leadership is significantly more effective in the public sector than the private sector. Additionally, the analysis shows that leaders who entered the experiment with higher values of transformational leadership (as seen by their employees) did not change as much as a result of training as the leaders who initially scored low on transformational leadership did.5 Controlling for this pre-existing level of transformational leadership compares public and private leaders with the same initial level of transformational leadership, thus basically neutralizing the sector differences in levels of initial leadership behavior (we will get back to whether initial leadership behavior moderates the effect of  leadership training on leadership behavior differently in private and public organizations when we test hypothesis 3 and 4 later). The change in transformational leadership (approximately 7.6 points in model 4 relative to private sector training) is slightly more than one-third of a standard deviation suggesting that this level of change is likely to be substantively important.

In summary the first experimental results demonstrate that transformational leadership by itself is effective in changing the leadership behavior of managers (in the eyes of their employees) in the public sector but not in the private sector. This supports hypothesis 1. A combination of leadership training that

5 This relationship is not strictly linear with small quadratic coefficients also statistically significant. This nonlinearity indicates that the relationship itself has diminishing marginal returns. We will address this in terms of sector differences in the analysis in Table 4.

incorporates both transformational and transactional leadership is equally effective in both the public and the private sectors, indicating that the environment needs to be reception to at least part of the logic in leadership training, before the training can be expected to change the manager's behavior as seen by the employees.

Verbal appreciation of employee effort and results can be seen as an element of both transformational and transactional leadership; both forms of training could be associated with changes in this type of leadership behavior. Table 2 presents a set of results concerning verbal appreciation parallel to those in table 1. Model 1 shows positive effects for all three experimental training regimens although the coefficients for all three experimental trainings are not statistically significant. Model 2 indicates that public sector managers are more sensitive overall to the training in terms of verbal awards, but again the results do not attain conventional levels of significance. The interaction effects of public sector in model 3 produce no significant results. The first three models show no statistical significant effects of leadership training and no difference in impact between the public and the private sector.

[Table 2 about here]

The conclusion on lack of sector differences, however, would be premature. Model 4 shows the theoretically expected negative relationship between prior level use of verbal appreciation and the change in the use of such awards. With this control, the modest differences in prior verbal appreciation in the public sector clarify the relationship between transformational leadership and the use of verbal appreciation. In the private sector transformational leadership training generates a negative but insignificant result; in the public sector, transformational leadership training is more effective at increasing the use of verbal appreciation. This finding is consistent with the sector differences in transformational leadership training in Table 1. The effect size for this experiment controlling for preexisting leadership behavior, training absences and sector (7.475 points) is similar in size to that of the transformational experiment, approximately one third of a standard deviation.

The use of pecuniary rewards for performance is a central element of transactional leadership but plays no role in transformational leadership. Table 3 presents the experimental results for transactional

17

leadership training and combined training on the use of pecuniary rewards. Model 1 shows that transactional leadership training has a statistically significant effect on the use of pecuniary rewards, while the effect of combined leadership training in transformational and transactional leadership is positive, but not statistically significant. Model 2 shows a modest and statistically insignificant, higher tendency for public managers to increase their use pecuniary rewards. The interaction effects by themselves in Model 3 show a set of insignificant relationships suggesting that transactional leadership training is equally effective in the public and private sectors.

[Table 3 about here]

The sector conclusions, however, may well be more complex than this. When controlling for prior use of pecuniary rewards in Model 4, combined training generates a positive increase in the use of pecuniary rewards in the public sector that is clearly lacking in the private sector. For pure transactional leadership training in contrast, the training is equally effective in both the public and private sector. The effect size for the pecuniary rewards training (6.6 points) is slightly smaller than the effect sizes for the other two types of training (.28 standard deviations), but within the general range of those effect sizes. Given the limits on pecuniary rewards in the public sector, a slightly lower effect size is not unexpected. While these results clearly do not support hypothesis 2 which expected a higher training effect for transactional leadership training in private organizations, the pattern showing more effective training when the environment is receptive to at least a part of the logic in leadership training might explain the difference between mixed and pure transactional training effects for public organizations.

In the previous analysis we have controlled for pretraining leadership scores but have not directly investigated hypothesis 3 and 4 which contend that transformational leadership training will be subject to greater diminishing marginal returns in the public sector (meaning that the training effect will depend more on initial transformational leadership in public organizations) and that transactional leadership training will have greater diminishing marginal returns in the private sector (meaning that the training effect will similarly depend more on initial transactional leadership in private organizations). The previous tables merely showed that prior levels of leadership generated diminishing marginal returns. To

18

test the sector specific hypotheses 3 and 4, we take the final models (model 4) from the first three tables and include an interaction of the public sector variable with the pretraining leadership scores in table 4. This interaction term will indicate if the diminishing marginal returns is more or less rapid by sector.

[Table 4 About Here]

Although the addition of a second set of interactions generates substantial collinearity, the analysis shows some clear results.[6] In model 1 examining transformational leadership, the preexisting transformational leadership coefficient (-0.285) shows a significant negative effect (consistent with declining marginal returns), and this should be interpreted as the marginal returns estimate for the private sector. The interaction coefficient (-0.146) shows the difference between the public and the private sector; this significant and negative coefficient indicates that transformational leadership is subjected to greater diminishing marginal returns in the public sector, thus providing support for hypothesis 3 (a total of -0.285 + -0.146 or -0.431).  Figure 1a presents these diminishing returns graphically; note how the slope for public organizations is much steeper than that for private organizations.

[Figure 1 About Here]

The verbal appreciation results (model 2) show an overall diminishing marginal returns based on prior leadership levels, but there are no sector differences (see also Figure 1b). The pecuniary rewards equation (model 3) presents clear and consistent results in regard to hypothesis 4. The pretraining leadership score is strongly negative indicating substantial diminishing marginal returns in the private sector (-0.641). The public sector interaction coefficient is *positive* and significant, indicating, as predicted, that the marginal returns are less negative in the public sector than the private sector (-0.641 + .152 = -0.489). Figure 1c illustrates that the slope for public organizations is flatter than that for private organizations.  This finding provides support for hypothesis 4.[7] Even with the additional collinearity

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[6]The average variance inflation scores for model 1, model 2, and model 3 are 11.04, 10.94, and 8.80 respectively. These indicate substantial collinearity, but the effects remain statistically significant.

[7] The diminishing returns findings reflect clear differences in the slopes. They are not the result of differences in the pretraining values for transformational leadership and for pecuniary rewards.

added in table 4, the basic findings of the previous analysis remain.

## Conclusions

In contrast to the literature that contends leadership training should be equally effective in the public and private sectors, this field experiment showed that the effectiveness of transformational and transactional leadership training varied by sector. The differences were often subtle, but those differences were consistent with our theoretical expectations. Transformational leadership training by itself was effective only in the public sector; its impact on leadership behavior as seen by the employees in private sector organizations was limited. This impact held for both transformational leadership behaviors and the use of verbal appreciation. Combining transformational leadership training with transactional leadership training generated positive gains in transformational leadership behavior in both sectors; there was no difference in the impact across sectors. Unlike some of the literature that suggests combination training is more effective than just transformational or just transactional leadership training, we found no evidence that combined training outperformed transformational training by itself on a consistent basis.

Transactional training by itself was effective in increasing the use of verbal appreciation and also affecting the use of pecuniary rewards. These influences were not affected by sector, that is, there was no difference in transactional training impact across the sectors. When transactional training was combined with transformational training, however, its influence on the use of pecuniary rewards was limited to the public sector. In both transformational leadership and in the use of pecuniary rewards, we also found sector differences related to preexisting leadership levels. Higher levels of preexisting transformational leadership in the public sector generated greater diminishing marginal returns in the public sector compared to the private sector. Similarly, higher levels of pecuniary rewards in the private sector generated greater diminishing marginal returns than in the public sector.

Stepping back from the details of the experiment, leadership training appears to be more effective in the types of organizations (in this case different sectors) where the orientation of the training (or at least part of the training) is consistent with the existing reward structure of the sector. Transformational leadership training shows more promise in the public sector than the private sector. While transactional

20

leadership training is generally equally effective in both sectors, its influence in the public sector is facilitated when it is combined with transformational leadership training. These direct effects of the training intervention also exist alongside differences in the marginal returns to training based on preexisting leadership behaviors. A topic for future research is to move to more nuanced classifications of organizations and their orientation toward different forms of leadership to determine if this is a sector specific finding or whether any organizations with a history of transformational leadership will be more responsive to additional transformational leadership training (and similar questions about transactional leadership training).

Although our experiment is the largest field experiment in terms of number of leaders and the extent of training provided exceeded that of prior efforts, the study is not without limitations. First, practical fiscal constraints of field experiments limited this study to a small number of industries in a single country. The private sector organizations included in the study with one exception (banks) had very public purposes, and even the banks are strongly regulated by government. Leaders of organizations more exposed to market forces might well respond differently to leadership training. Similarly, the public organizations examined all have potential private sector counterparts (even tax agencies can be privatized, see Lowery 1982). Public organizations, particularly those without established performance criteria (e.g., foreign policy, defense), could also respond differently.

Second, the political and organizational context in Denmark might affect the results given the variation in other management variables across nations (O'Toole and Meier 2015). Denmark, given its corporatist political structure creates an environment where the distinction between public and private organizations is not as great as in liberal political systems such as the U.S or Australia. The corporatist context likely reduced the sectoral differences, and replications in more market oriented contexts should show even larger differences. A comparison of Danish and US schools (Meier et al. 2015) shows that Danish schools are less hierarchical with less decision authority vested in management, both of which occur in the presence of strong unions. Such characteristics likely make the job of leadership more difficult and could affect the relative efficacy of transformational and transactional leadership training.

21

Clearly similar studies in other nations and contexts would be valuable.

Third, while field experiments have advantages in terms of external validity, they operate without the rigid controls that are possible in a laboratory experiment. The current experiment operated amidst the day-to-day pressures that organizations face and fairly strong demands by owners and political principals for improved performance. Any concurrent policy or procedural changes that affected these organizations cannot be fully disentangled from the experimental treatment effect.

Finally, this study has not addressed the efficiency question but solely the effectiveness of leadership training. Whether the degree of change induced by the experiment is sufficient to change the performance of the organization and whether the costs of training justify the end results are topics for future research. The subsequent impact of leadership training on organizational effectiveness remains an important question and one that needs to be addressed in a variety of contexts.

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Table 1. The Impact of Transformational Leadership Training on Employee Perceptions of Transformational Leadership

Dependent Variable = Change in Transformational Leadership

|  | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Transformational Leadership Training | 4.013** | 4.201** | 0.696 | -3.783 |
|  | (1.510) | (1.488) | (2.125) | (2.751) |
| Combined Leadership Training | 4.322** | 4.297** | 5.242* | 2.289 |
|  | (1.308) | (1.314) | (2.327) | (3.011) |
| Public Organization (Public=1) |  | 3.311** | 1.905 | -1.774 |
|  |  | (1.245) | (1.728) | (2.117) |
| Public × Transformational |  |  | 4.137 | 7.675* |
|  |  |  | (2.712) | (3.249) |
| Public × Combined Training |  |  | -1.047 | 2.761 |
|  |  |  | (2.739) | (3.373) |
| High Absences (1=two or more absences) |  |  |  | -1.964 |
|  |  |  |  | (1.593) |
| Transformational Leadership $t$ |  |  |  | -0.411** |
|  |  |  |  | (0.028) |
| Constant | -2.703** | -5.632** | -4.388** | 28.319** |
|  | (1.020) | (1.334) | (1.299) | (2.852) |
| R-Squared overall | 0.0100 | 0.0132 | 0.0149 | 0.2174 |
| N | 2388 | 2388 | 2388 | 2388 |

Notes: $+p < 0.10$, $*p < 0.05$, $**p < 0.01$; clustered robust standard errors in parentheses; two-tailed test.

Table 2. Impact of Training on the Employee Perceived Use of Verbal Appreciation

Dependent Variable = Change in the Use of Verbal Appreciation

|  | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Transformational Leadership Training | 1.163 | 1.267 | -1.072 | -6.029 |
|  | (1.521) | (1.503) | (3.139) | (3.925) |
| Combined Leadership Training | 1.340 | 1.321 | 3.462 | -0.973 |
|  | (1.491) | (1.502) | (3.800) | (3.053) |
| Transactional Leadership Training | 2.168 | 2.232 | 1.550 | -0.754 |
|  | (1.377) | (1.374) | (2.275) | (2.920) |
| Public Organization (Public=1) |  | 1.920 | 1.384 | -4.160 |
|  |  | (1.480) | (1.648) | (2.557) |
| Public × Transformational |  |  | 2.787 | 7.475+ |
|  |  |  | (3.548) | (4.250) |
| Public × Combined Training |  |  | -2.390 | 2.150 |
|  |  |  | (4.127) | (3.502) |
| Public × Transactional |  |  | 0.782 | 3.040 |
|  |  |  | (2.749) | (3.316) |
| High Absences (1=two or more absences) |  |  |  | -1.846 |
|  |  |  |  | (1.708) |
| Verbal Appreciation $t$ |  |  |  | -0.371** |
|  |  |  |  | (0.020) |
| Constant | -1.690+ | -3.386* | -2.912* | 27.055** |
|  | (0.945) | (1.517) | (1.262) | (2.822) |
| R-Squared overall | 0.0011 | 0.0020 | 0.0028 | 0.1785 |
| N | 3163 | 3163 | 3163 | 3163 |

Notes: $+p < 0.10$, $*p < 0.05$, $**p < 0.01$; clustered robust standard errors in parentheses; two-tailed test.

Table 3. The Impact of Transactional Leadership Training on Employee Perceived Use of Pecuniary Rewards

Dependent Variable = Change in Use of Pecuniary Rewards

|  | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Transactional Leadership Training | 2.928* | 2.974* | 2.951 | 3.872 |
|  | (1.475) | (1.475) | (3.616) | (3.753) |
| Combined Leadership Training | 2.301 | 2.286 | -0.281 | -2.758 |
|  | (1.446) | (1.452) | (4.362) | (3.530) |
| Public Organizations (Public=1) |  | 1.405 | 0.490 | -0.705 |
|  |  | (1.902) | (2.133) | (2.596) |
| Public × Transactional |  |  | -0.008 | 0.658 |
|  |  |  | (3.956) | (4.086) |
| Public × Combined Training |  |  | 2.885 | 6.611+ |
|  |  |  | (4.629) | (3.956) |
| High Absences (1=two or more absences) |  |  |  | -6.127** |
|  |  |  |  | (1.718) |
| Pecuniary Rewards $t$ |  |  |  | -0.508** |
|  |  |  |  | (0.022) |
| Constant | -2.190* | -3.429+ | -2.622 | 17.912** |
|  | (0.936) | (1.848) | (1.866) | (2.458) |
| R-Squared overall | 0.0027 | 0.0031 | 0.0034 | 0.2470 |
| N | 2304 | 2304 | 2304 | 2304 |

Notes: $+p < 0.10$, $*p < 0.05$, $**p < 0.01$; clustered robust standard errors in parentheses; two-tailed test.

Table 4. Testing Differences in Marginal Returns for Prior Leadership behaviors

| Dependent Variables: | ΔTFL Model 1 | ΔVR Model 2 | ΔPR Model 3 |
|---|---|---|---|
| Public Organizations (Public=1) | 9.568+ | 0.268 | -6.430+ |
| | (5.301) | (4.491) | (3.672) |
| Transformational Leadership Training | -2.406 | -5.375 | |
| | (2.331) | (3.854) | |
| Public × Transformational | 6.186* | 6.795 | |
| | (2.823) | (4.187) | |
| Combined Leadership Training | 3.104 | -0.431 | -3.093 |
| | (2.571) | (3.054) | (3.595) |
| Public × Combined Training | 1.940 | 1.596 | 6.954+ |
| | (2.972) | (3.484) | (4.009) |
| Transactional Leadership Training | | -0.445 | 4.062 |
| | | (2.829) | (4.053) |
| Public × Transactional | | 2.725 | 0.429 |
| | | (3.243) | (4.357) |
| Transformational Leadership $t$ | -0.285** | | |
| | (0.057) | | |
| Public × Transformational $t$ | -0.146* | | |
| | (0.064) | | |
| Verbal Appreciation $t$ | | -0.323** | |
| | | (0.036) | |
| Public × Verbal Appreciation $t$ | | -0.057 | |
| | | (0.043) | |
| Pecuniary Rewards $t$ | | | -0.641** |
| | | | (0.068) |
| Public × Pecuniary Rewards $t$ | | | 0.152* |
| | | | (0.072) |
| High Absences (1=two or more absences) | -1.802 | -1.808 | -6.193** |
| | (1.587) | (1.717) | (1.692) |
| Constant | 18.433** | 23.166** | 22.898** |
| | (4.804) | (4.004) | (3.442) |
| R-Squared overall | 0.2205 | 0.1791 | 0.2495 |
| N | 2388 | 3163 | 2304 |

Notes: +$p < 0.10$, *$p < 0.05$, **$p < 0.01$; ΔTFL= change in transformational leadership; ΔVR=change in verbal appreciation; ΔPR=change in pecuniary rewards; clustered robust standard errors in parentheses; two-tailed test.

Figures

Figure 1a: Diminishing marginal returns in public and private organizations (Transformational Leadership)
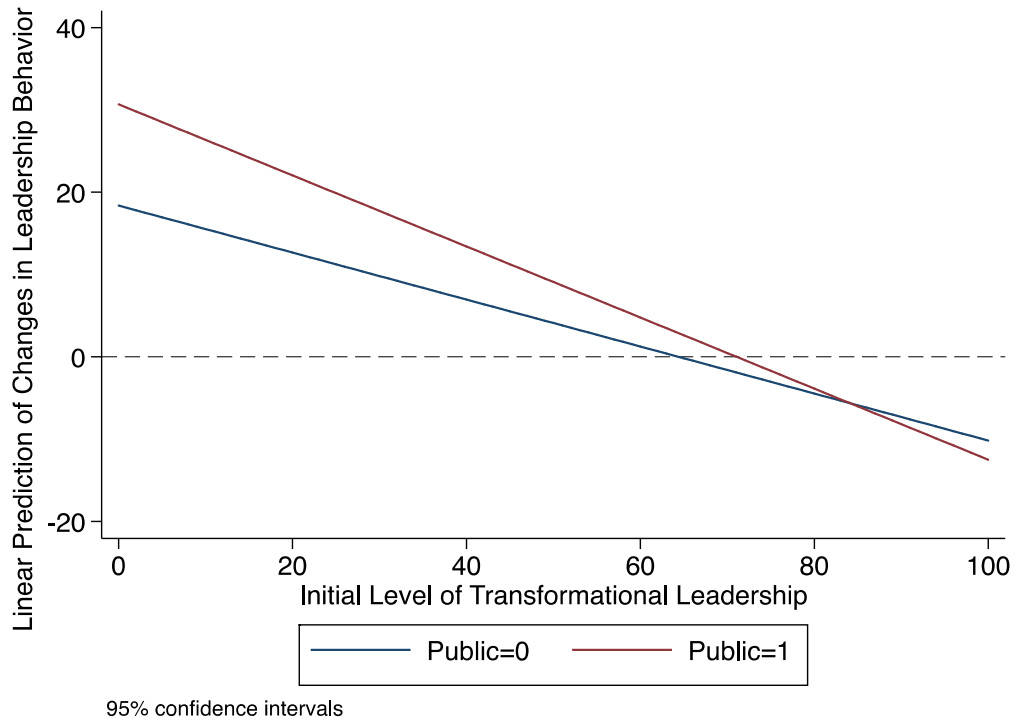


Figure 1b: Diminishing marginal returns in public and private organizations (Verbal Rewards)
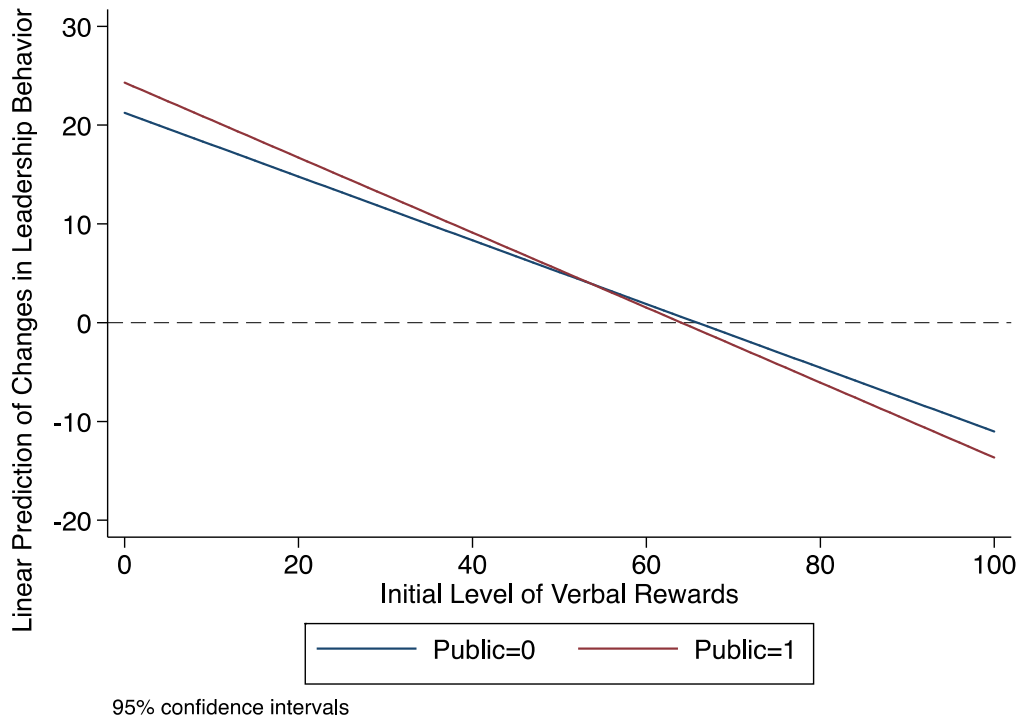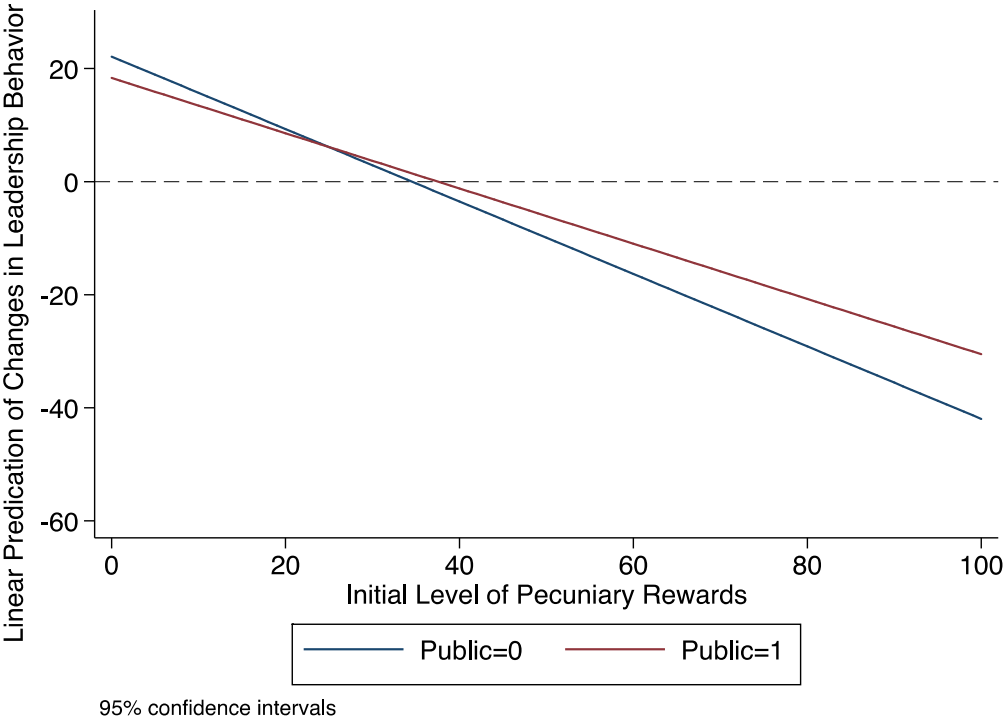
Figure 1c: Diminishing marginal returns in public and private organizations (Pecuniary Rewards)



95% confidence intervals

Appendix

Table 1: Factor Loadings for each indicator

| Transformational Leadership Indicators | Loading |
|---|---|
| Concretizes a clear vision for the [organization's] future | 0.86 |
| Seeks to make employees accept common goals for the [organization] | 0.84 |
| Strives to get the [organization's] employees to work together in the direction of the vision | 0.90 |
| Strives to clarify for the employees how they can contribute to achieving the [organization's] goals | 0.88 |
| Cronbach's alpha=0.89 | |

| Verbal Appreciation Indicators | Loading |
|---|---|
| Gives individual employees positive feedback when they perform well | 0.94 |
| Actively shows his/her appreciation of employees who do their jobs better than expected | 0.93 |
| Personally compliments employees when they do outstanding work | 0.95 |
| Cronbach's alpha=0.93 | |

| Pecuniary Rewards Indicators | Loading |
|---|---|
| Rewards the employees' performance when they live up to his/her requirements | 0.92 |
| Rewards the employees' dependent on how well they perform their jobs | 0.90 |
| Points out what employees will receive if they do what is required | 0.84 |
| Cronbach's alpha=0.88 | |

Table 2: Descriptive Statistics

| Variable | Obs. | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Δ Transformational Leadership | 2450 | .08 | 19.67 | -100 | 100 |
| Transformational Leadership *t* | 2450 | 70.12 | 21.45 | 0 | 100 |
| Δ Verbal Appreciation | 3227 | -.50 | 22.87 | -100 | 100 |
| Verbal Appreciation *t* | 3227 | 65.65 | 25.82 | 0 | 100 |
| Δ Pecuniary Rewards | 2352 | -.41 | 23.82 | -100 | 100 |
| Pecuniary Rewards *t* | 2352 | 38.18 | 22.95 | 0 | 100 |
| Transformational Leadership Training | 3269 | .26 | .44 | 0 | 1 |
| Combined Leadership Training | 3269 | .25 | .43 | 0 | 1 |
| Transactional Leadership Training | 3269 | .23 | .42 | 0 | 1 |
| Public Organizations (Public=1) | 3269 | .87 | .34 | 0 | 1 |
| High Absences (1=two or more absences) | 3269 | .19 | .39 | 0 | 1 |