

# Focusing Attention in Multiple Tasks\*

## Extended Abstract

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### Abstract

With increasingly complex workplaces agents face a multitude of different tasks. Standard contract theory predicts similar complex contracts, however, actual contracts are simpler. In order to explain this puzzle I propose a model in which agents' limited attention leads to an instinctive focus on tasks with high outcome variation. This focus of attention leads to a countervailing effect, where despite optimal incentives for a rational agent, the focusing agent chooses the wrong allocation of effort. This provides a mechanism of findings in field studies. In order to prevent the agent from focusing too much on some tasks over others, the principal needs to assimilate the incentives. Thus even if all outcomes can be measured, the principal will not condition the optimal contract on all available information.

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The modern 'representative firm' is a large, complex organization. Its major functions are performed by different divisions more or less coordinated by a set of control procedures.

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Cyert and March, 1963, p.1

One of the most puzzling and troubling failures of incentive models has been their inability to account for the paucity of explicit incentive provisions in actual contracts.

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Holmström and Milgrom, 1991, p.34

## 1 Motivation

In modern economics the typical job description contains a variety of different tasks. Not only the manager has to fulfill multiple tasks but also the project manager and the white collar worker. The work environment becomes increasingly complex with the addition of new tasks. Standard contract theory implies increasingly complex contracts that capture the variety of tasks. In this context the quotes by Cyert and March (1963) and Holmström and Milgrom (1991) open up the questions: With increasing complex organizations, why don't we observe increasingly complex contracts? Why aren't compensation schemes tied to all tasks individually but rather the use of one signal in form of stock market performance or overall performance evaluations?

In their seminal work Holmström and Milgrom (1991) suggest as explanation for the lack of complexity that several tasks are not observable. Those tasks cannot be contracted upon and therefore are ignored by the agent. However, if these tasks are important to the principal and agents are willing to exert effort in all dimensions even if they have no explicit incentives, then it is optimal to set no incentives at all and rather pay a flat wage.

I propose another mechanism by turning to the agent's cognitive limitations: All tasks can be observed, but the agent's limited attention is the reason for using simple incentives.

A complex contract with incentives for multiple tasks will divert the agent's focus to those tasks that have the highest influence on his compensation. This mechanism combines a model of multiple tasks with context-dependent preferences, where the agent chooses his effort in each task. The variation in the different outcomes influences the agent's perception, which in turn leads to higher effort in tasks with higher variation.

My first main result shows if a contract is not 'focusing-proof', an otherwise optimal contract will induce an effort allocation contrary to the principal's intentions. This result provides a simple explanation for findings in field experiments (Barankay (2012), Manthei and Sliwka (2013), Englmaier et al. (2016)), how incentives can result in inefficient effort choices. Especially in Englmaier et al. (2016) the focusing effect is very clear, because workers focus on the task with a high prize and high uncertainty.

My second main result derives the optimal contract for focusing agents. As an application of Kőszegi and Szeidl (2013) I can show that in order to avoid the wrong effort allocation, the optimal contract will assimilate incentives. This results in a higher perceived similarity of the different tasks from the agent's perspective.

My third main result shows that as the number of tasks increases, the alignment of incentives in different dimensions leads to a simple contract in the form that instead of contracting on a multitude of different tasks, it uses one general measure.

These results provide an intuition why contracts don't become more complex with an increasing number of tasks in work environments. In order to prevent the agent from focusing too much on some tasks over the others, the principal needs to align the incentives. Thus even if all outcomes can be measured, the principal will not condition the optimal contract on all available information. This violates the informativeness principle.

An incomplete contract that only specifies a fraction of tasks can increase performance. Therefore my results give a new perspective on the role of framing of compensation schemes and the agent's perception of contracts.

## 2 Description of Model

I combine the Kőszegi and Szeidl (2013) and Bushong et al. (2015) model for focusing decision maker with the Holmström and Milgrom (1991) multiple task framework. A principal hires an agent to perform several different tasks. The performance in each task can be measured and is verifiable. The performance depends on the agent's effort in the task, as well as a random shock. Neither effort nor the shock can be verified. The performance in each task is therefore the combination of shock and effort.

The realized random shocks have a multivariate normal distribution with mean zero and a variance strictly greater than zero. I assume that there is no correlation of shocks. This allows for clear results with increasing number of tasks, because only their variance matters and not the interaction with other tasks.

The focusing distortion influences the agent's perception of the linear sharing rules for each task. This influence is generated through a weighting function, that is increasing in the range of outcomes in each task. I deviate from Bushong et al. (2015) definition by using the expected value and the variance of a task instead of expected value and average self-distance in order to generate results that are easier to interpret. The basic intuition is, that those tasks with higher payment variation receive more attention and therefore a higher weight.

These 'perceived' linear sharing rules in turn influence the agents perception of the optimal effort choice in each dimension.

## 3 Results

First I analyze the effort choice of the focusing agent if the contract was designed for a rational agent, i.e. the contract is not 'focusing-proof'. It is straightforward to show, that the agent will deviate from the principals intended effort. This becomes more pronounced in an example similar to Englmaier et al. (2016), where in case of two different tasks with different reward schemes (piece rate and quality check/tournament) the agent chooses an effort allocation contrary to the principal's desired choice. This results from the different

focus each of the reward schemes induces.

Second, the optimal contract for focusing agents takes the weights into account. In order to balance the focusing weights, the principal needs to increase the slopes of flatter linear sharing rules, while she decreases the slope of steeper ones. This could be achieved through introducing additional noise terms. In expectations this results in a higher perceived similarity between the different tasks.

Third, as a comparative statics result I increase the number of tasks. With an increase in tasks and by assumption an increase of variation in payments, the alignment of incentives becomes more difficult. This results in a threshold where it is better for the principal to use one single measure for overall performance, if possible. Or use a flat wage as long as some tasks are perceived as being recreational. This result is very similar to the result in Holmström and Milgrom (1991) on the provision of incentives in multiple tasks with unobservable outcomes. However, my mechanism focuses on the agent's (in)ability to cope with complex work environments instead.

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