

Creativity, Motivation and Evaluation.

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Abstract

The most difficult thing for a supervisor or a manager is to keep his/her staff motivated. As we know when employees are motivated this is better for the work environment, their personal health and most of all their level of job performance. There are many ways to motivate employees, for an example extra vacation days, monetary rewards, verbal rewards etc. What we do not know is if we want to be creative in our performance do these kind of reward motivate enough, or can we only be creative when we feel inner passion or love for our work? In this paper we try to find out what is better for the job performance level of employees, extrinsic or intrinsic motivation.

In the study that was conducted we tried to find out how creative performance in Typical and Maximum performance situations reveals. The main question that rose was: will evaluating performance have an effect (positive or negative) on creativity if one is asked to be creative? 232 Participants were asked to answer 5 open-ended general questions. The fourth question was evaluated and the participants were instructed to be very creative and that the best performance of the week would be rewarded extra. Creativity was measured in two ways: first, by the frequency of the ideas and second, by two different raters who gave scores ranging from 1 to 7 on Originality and Feasibility. The results showed that differences between Typical and Maximum performance were found, the participants were more creative in a Maximum performance condition. Although these differences were not significant enough to conclude that evaluation can raise even creative performance.

1. Introduction

Is it useful to supervise your employees to make sure they do the best they can? Obviously one would think the answer is yes: people work harder when they are watched, hence job performance increases. Several studies (Klehe & Anderson, 2004a, Klehe, Hoefnagels, & Anderson, under review) have supported this statement. To supervise employees we have tools like video cameras, supervisors walking around on the work floor or tapping of phone calls in the telemarketing business. But do we get the right picture of what is really happening when supervision is not taking place? What happens to the quality of job performance when employees do not feel they are being evaluated? Many researchers have devoted their work to finding an answer this question. In the line with these studies we will look at the effect of evaluation on creativity in job performance as an indicator for the quality of job performance.

In any selection process, organizations wish to distinguish between what applicants 'can' and what they 'will' do (Klehe & Anderson, 2004a). The importance of making the distinction between Maximum (what people 'can' do) and Typical performance (what people 'will' do) lies in the fact that validity studies will run the risk of under- or overestimating the criterion-related validity and hence the financial utility of selection procedures if they apply Maximum performance criteria while researchers are interested in predicting Typical performance, and vice versa. Inclusion of Typical and Maximum performance criteria can offer important insights regarding selection procedures' construct validity. For several reasons it is important to be able to predict the kind of performance that will be demonstrated on the work floor like the kind of leadership needed, teambuilding and productivity issues (Klehe & Anderson, 2004a). The difference between a Maximum performance situation and a Typical performance

situation is that the former consists of job performance during short evaluative situations and the latter of job performance during ongoing work-conditions. We will name the 'supervision' situation (Maximum performance) and the 'non-supervision' situation (Typical performance) as two distinct conditions in the rest of this study, it should first be basically clear what distinguishes them.

Job performance is generally conceptualized as a function of 'ability' and 'motivation' (Locke, Mento & Katcher, 1978; Maier, 1955 as in Klehe & Anderson, 2004a). When it comes to the motivation aspect of performance there are three choices. The first choice is to expand effort, meaning the direction of the effort displayed. The second choice is the level of effort to expand and the third choice is whether to persist in the expenditure of that level of effort (Campbell, 1990 as in Klehe & Anderson, 2004a). When it comes to the ability aspect of performance, Campbell (1990) distinguished it further into declarative knowledge, knowledge that can be stated in words, and procedural knowledge that include knowledge of motor skills.

The objective of this experiment is to outline the difference between maximum performance and typical performance and the effect on creativity of both performance conditions. By trying to explain the difference between maximum and typical performance we start with defining the concept of these two types of performance. The expected effects of these performance conditions on creativity will be discussed later.

During typical job performance, performers are relatively unaware that their performance may be observed or even evaluated. They are not consciously trying to continually perform their absolute best. These performers work on their task over an extended period of time (Klehe & Anderson, 2004a: as defined by Sackett et al., 1988). During maximum job performance, performers are very well aware of being evaluated and they are aware and accept implicit or explicit instructions to maximize their effort.

They are observed for short-enough time periods to keep their attention focused on the task (Klehe & Anderson, 2004a: as defined by Sackett et al., 1988). Now when we take a typical performance situation we believe that motivation will be varying, because people are not constrained to do their 'absolute best' (Klehe & Anderson, 2004a). On the other hand, if we take a maximum performance situation, people are highly motivated to do their absolute best because of various incentives like evaluation, reward or the explicit instruction to do their absolute best.

Although other studies have proven the distinction in Typical and Maximum performance conditions to exist (Klehe & Anderson, 2004a, Klehe, Hoefnagels, & Anderson, under review) not many studies have looked at the quality of the performance displayed in these conditions in the form of creativity. What is particularly interesting to look at is the level of creativity displayed in the performance in a Typical and Maximum performance conditions respectively. Finding an effect of Maximum performance on creativity supports former research about the distinction that should be made between Typical and Maximum performance situations and all financial consequences for using the wrong selection procedures to predict the kind of performance wanted (Klehe & Anderson, 2004a). A second argument is that employees are more satisfied with their work when they can be creative (Collins & Amabile, 1999).

Will evaluating performance have an effect on creativity if one is asked to be creative? Creativity in this study has to be considered as generating answers to a question about a general problem 'as good as you can' and 'as many answers as you can'. This is a distinction made in quality and quantity of an answer respectively. To answer the question whether evaluation has an effect on performance and on the creativity of performance in particular, the following hypotheses were posed:

Based on the study conducted for this paper the question has risen which role motivation plays in performance when creativity is involved. Thus the effects of intrinsic and extrinsic motivating people to perform and comparing creativity of people who are not evaluated and people who are evaluated. This paper will try to highlight the difference between motivations and views for getting people to generate creative ideas at their best. Considering this study where subjects were asked to give as many ideas as possible answering a series of general problems, a significant effect was found on the 'uniqueness' of ideas given between the non-evaluative (Typical) conditions and the evaluative (Maximum) condition. When in typical conditions subjects gave less unique ideas compared to the answers given in the maximum condition.

Rated on originality and feasibility, another way of measuring creativity, no significant difference was found between the Typical and Maximum conditions for both the quantity and quality of answers given. In other words, when asked to give as many answers as possible (quantity) subjects didn't give more or less original answers when they were evaluated compared to when they were not evaluated. The same effect was found for subjects who were asked to give an answer as good as possible (quality). For the second component of creativity, feasibility, similar effects were found.

What is interesting is that the strongest effect found in this study was in the quantity of answers condition, and not in the quality of answers condition. Asking subjects to come up with as many answers as possible had an effect in producing a greater amount and significantly more unique ideas when the subjects were evaluated, but asking subjects to come up with ideas as good as possible created no effect when they were evaluated. Creativity rated in merits of originality and feasibility had no

significant effect in either condition. On the originality component of creativity a marginal effect was found. It seemed that subjects generated more original ideas in the evaluative condition than in the non-evaluative condition.

These findings raise the question whether it was the way in which the subjects were instructed to answer the problems, e.g. as many answers as possible or as good an answer as possible, had an effect on generating creative ideas. What kind of role did the monetary reward play (extrinsic motivation) that was promised for the best answer? Can we examine the effect of evaluation and reward on creativity? What instructions are in favor of triggering subject to be creative? With pressure from outside or extrinsic motivators are playing parts it could also be that performance is blocked and the quality of the answers goes down, even when the frequency of answers is high. In the following part of this paper the difference between Typical and Maximum performance will be discussed shortly. In order to answer the previous questions research that has been conducted on motivation and creativity will be discussed. After that creativity as a concept will be delved into. The study that has been conducted follows with the method and results, after which the discussion will close this paper.

2. Typical versus Maximum Performance

Cronbach (1960) attributed the distinction between typical and maximum performance predictor measures. Maximal performance measures are designed to reflect what an individual 'can do', whereas typical performance measures are designed to reflect what an individual 'will do'. This distinction is important in any selection process in terms of job performance prediction. Job performance is generally

conceptualized as a function of ability and motivation (Locke et al., 1978). If ability (A) is defined as the capacity to perform (i.e., knowledge and skill), and motivation (M) is defined as the desire to perform (i.e., effort), then the interaction hypothesis is that $P = A \times M$. Sackett et al. (1988) describe typical performance takes place in a situation in which individuals were not aware that their performance was being observed and evaluated, were not consciously attempting to perform to the best of their ability, and whose performance was monitored over an extended period of time. The polar opposite of a typical performance situation is the maximal performance measure. In this measure three characteristics are proposed (Sackett et al., 1988). First, there must be explicit awareness that one is being evaluated. Second, there must be awareness and acceptance of implicit or explicit instructions to maximize effort. Third, performance must be measured over a short enough time duration that the performer's attention remains focused on the accepted goal of maximum performance. To explain these two 'extremes' Sackett et al., (1988) used an example of a college professor who although he realizes that his or her performance will be evaluated by students at the end of the term, the time duration covered is such that student ratings are appropriately viewed as a typical performance measure. However ratings that are based on a lecture delivered after advance warning that the dean will be 'sitting in' can be considered a maximum performance measure. For many jobs, ranging from cashiers to researchers to managers, typical performance represents the broadest part of daily activities (Klehe & Anderson, 2004a). Klehe & Anderson (2004a) have done research to find the best way how to measure the constructs Typical and Maximum performance. Klehe & Anderson (2004b) have developed a 20-items questionnaire, the TMPS, with which these job performance constructs are measured, based on the model of Sackett et al. (1988). The distinction between

Maximum and Typical performance is based on the distinction made before by Cronbach (1960) 'what people *will* do' over a longer period of time working / performing in the same setting 'what people *can* do' in a shorter period of time in evaluative situations.

TMPS consists of five subscales, the so-called situational characteristics (Klehe & Anderson 2004b). These situational characteristics make it possible to measure performance such as typical and maximum performance. These are 'direction', 'level', 'persistence', 'evaluation' and 'instruction' (Sackett et al., 1988; DuBois et al., 1993). A few examples of these items are: '*While working, I thought about other, work -unrelated, things (Direction)*', '*I fully focused on the work at hand (Level)*' and '*The work became tiresome after a while (Persistence)*'. The TMPS is included in the appendix.

Podsakoff et al., (1984) concluded that performance-contingent punishments and rewards do not influence the distinction between the typical-maximum-performance. Likewise the reward of 20 euro the participants received in this study did not influence measuring typical and maximum performance. The effects of rewards or extrinsic and intrinsic motivation will be mentioned more extensively later in this chapter.

Klehe & Anderson's study (2004a) has pointed out that in typical-performance situations performance varies depending on high or low motivation. Performance was positively correlated with motivation. In the maximum performance situations a higher or lower motivation made no difference: the correlation between motivation and maximum performance is low but lies relatively higher than the correlation in typical performance situations. A typical performance situation is a situation in which

the performers are relatively unaware that their performance is being observed and evaluated, are not consciously trying to perform their 'absolute best', and have their mean performance observed over an extended time-period. In contrast, maximum performance situations are characterized by: performers' explicit awareness of being evaluated, awareness and acceptance of instructions to maximize effort and a short enough time duration to enable performers to keep their attention focused on the task (Klehe & Anderson, 2004a: as defined by Sackett et al., 1988).

We also included the mood state of the participants, using the PANAS, as an explorative measurement to see if this could explain any unexpected effect on ones performance (we excluded PANAS for analyses).

3.1. Motivation

Motivating people is one of the most important concerns of managers in organizations. Everyone knows that motivation improves the productivity of co-workers in strong content. Deci, Ryan and Koestner (1999) describe motivation as *to be moved* to do something. A person who feels no impetus or inspiration to act is thus characterized as unmotivated, whereas someone who is energized or activated toward an end is considered motivated. Rainey (1993) handles this definition: 'the degree to which a person is moved or aroused to expend effort to achieve some purpose. Work motivation refers to how much a person tries to work hard and well to the arousal, direction and persistent of effort in working settings'. Vinke (1995) gives a theoretical and a practical definition of motivation. In the theoretical part he describes motivation as a process of factors and urges through which the behavior gets direction and keeps it. In the practical part he describes the behavior in which the attractiveness or

repulsiveness of the yields comes to expression. Keuning and Eppink (1999, p. 610) define motivation as a process in which goal-oriented behavior arises with a particular duration and intensity. Yet, even a brief reflection suggests that motivation is hardly a unitary phenomenon. In Deci & Ryan (2000) they say: *'People have not only different amounts, but also different kinds of motivation. That is, they vary not only in level of motivation (i.e., how much motivation), but also in the orientation of that motivation (i.e., what type of motivation). Orientation of motivation concerns the underlying attitudes and goals that give rise to action—that is, it concerns the why of actions. As an example, a student can be highly motivated to do homework out of curiosity and interest or, alternatively, because he or she wants to procure the approval of a teacher or parent. A student could be motivated to learn a new set of skills because he or she understands their potential utility or value or because learning the skills will yield a good grade and the privileges a good grade affords. In these examples the amount of motivation does not vary, but the nature and focus of the motivation being evidenced certainly does'*.

In the Self-Determination Theory (Deci & Ryan, 1985) different types of motivation based on the different reasons or goals that give rise to an action is distinguished. The most basic distinction is between *intrinsic motivation*, which refers to doing something because it is inherently interesting or enjoyable, and *extrinsic motivation*, which refers to doing something because it leads to a separable outcome. Intrinsically motivated behaviors, which are performed out of interest and satisfy the innate psychological needs for competence and autonomy, are the prototype of self-determined behavior. Extrinsically motivated behaviors can vary in the extent to which they represent self-determination. Internalization and integration are the processes through which extrinsically motivated behaviors become more self-

determined (Deci & Ryan, 2000). Unlike some perspectives that view extrinsically motivated behavior as invariantly non-autonomous, SDT (Self-Determination Theory) proposes that extrinsic motivation can vary greatly in its relative autonomy (Deci & Connell and Ryan, 1989; Vallerand, 1997 in Deci & Ryan, 2000). For example, students who do their homework because they personally grasp its value for their chosen career are extrinsically motivated, as are those who do the work because they are adhering to their parents' control. Both examples involve instrumentalities rather than enjoyment of the work itself, yet the former case of extrinsic motivation entails personal endorsement and a feeling of choice, whereas the latter involves compliance with an external regulation. Both represent intentional behavior (Heider, 1958 in Deci & Ryan, 2000). Figure 1. Illustrate these differences in motivation. At the left there is *amotivation*, which is the state of lacking an intention to act (Deci & Ryan, 1999).

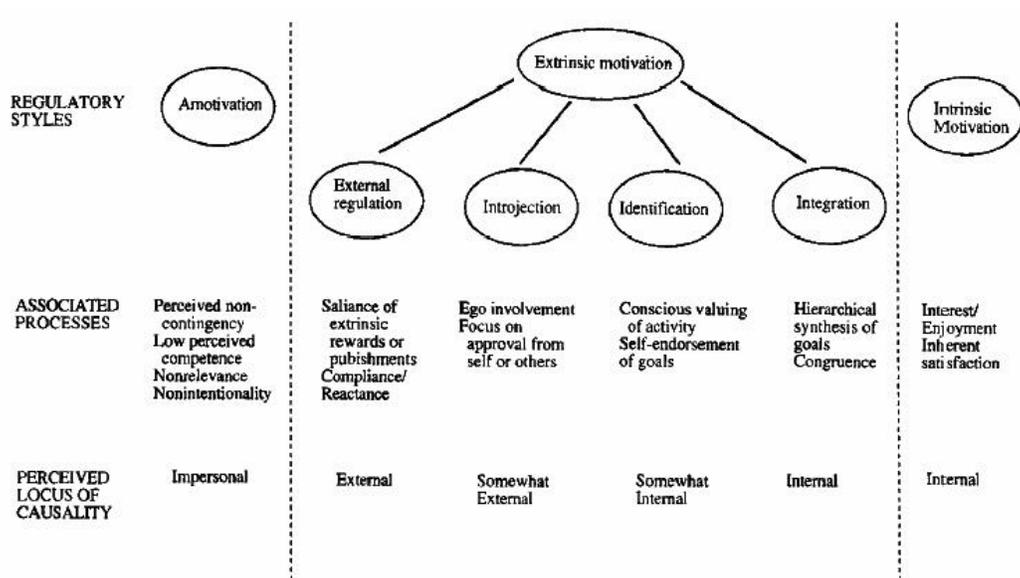


FIG. 1. A taxonomy of human motivation.

(Deci & Ryan, 1999)

3.2. Intrinsic Motivation and Creativity

As coming to the point when performance gets creative, research has found that this requires a high level of motivation (Amabile & Conti, 1999). Amabile & Conti say about creativity and motivation: '*Intrinsic motivation is conducive to creativity, but extrinsic motivation is detrimental*' (1983). It appears that when people are primarily motivated to do some creative activity by their own interest in—a desire to do work for its own sake, and enjoyment of that activity, they may be more creative than they are when primarily motivated by some goal imposed on them by others. Therefore intrinsic motivation is defined as the motivation to engage in an activity primarily for its own sake, because the individual perceives the activity as interesting, involving, satisfying, or personally challenging; it is marked by a focus on the challenge and the enjoyment of the work itself (Collins & Amabile, 1999, p.297). According to Amabile (1985) extrinsic constraints can influence not only subsequent interest, but also aspects of immediate performance—specifically, aspects of performance related to creativity. Several studies have demonstrated that extrinsic constraints can undermine creativity. In one study, for example, women who did artwork under the expectation of external evaluation produced work that was judged by artists as lower in creativity than that produced by women who did not expect evaluation (Amabile, 1979). This effect of evaluation has been replicated with both artistic and verbal creativity; in addition, results on artistic creativity suggest possible undermining effects of surveillance during work (Amabile, Goldfarb, & Brackfield, 1990). A number of investigators have studied the effects of expected reward on creativity. Kruglanski, Friedman & Zeevi (1971) found that high school students who expected rewards for their work wrote less creative stories and story titles than

students who simply volunteered to do the work. McGraw and McCullers (1979) found that adults working for money take longer break set on Luchins's water jar problems and make more errors in solving the set-breaking problems, than do adults not working for reward. Thus people who generally approach their work with an intrinsic orientation may be more consistently creative than people who adopt an extrinsic orientation.

Although Amabile (1983) mentioned that there are large differences in the degree to which external goals undermined creativity and the influence of social factors like learning to overcoming external constraint. However it can be said that social psychological factors are important in creativity and, among these, the most crucial may be those that either lead people to concentrate on the intrinsically interesting aspects of a task or lead them to concentrate on some extrinsic goal. Within every individual, creativity is a function of three components: *expertise*, *creative-thinking skills* and *motivation* (Amabile & Conti, 1999). In short, expertise is knowledge-technical, procedural, and intellectual. Creative-thinking skills determine how flexible and imaginative people approach problems. When it comes to motivation, not all motivation is created equal. An inner passion to solve the problem at hand leads to solutions far more creative than do external rewards, such as money (extrinsic motivation). Money or any other extrinsic reward doesn't stop people from being creative, but in many situations, it doesn't help either. Moreover Amabile et al., (1986) found in their experiment on the effects of contracted-for reward, that contracting to do an activity in order to receive reward had negative effects on creativity, but receiving no reward or only a noncontracted- for reward didn't have any such negative effects. Simonton (1977) examined the relations between creative productivity at various points in the lives of ten classical composers and the social

reinforcements they received during those periods (such as honorary degrees or other prizes). The two variables were not significantly related. In 1971, Deci (1971) argued that some activities provide their own inherent reward, so motivation for these activities is not dependent on external rewards. Deci referred to such activities as intrinsically motivated and raised the question of how extrinsic rewards would affect people's intrinsic motivation for these activities. Research reported in that and subsequent papers (Deci, 1971, 1972a, 1972b) revealed that tangible rewards (viz., money) could undermine college students' intrinsic motivation for an interesting activity, and studies by Kruglanski, Friedman, and Zeevi (1971), as mentioned earlier, and Lepper, Greene, and Nisbett (1973) replicated the general finding, showing that other material and symbolic rewards could also undermine the intrinsic motivation of high school and preschool students. The meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation (Deci, Ryan and Koestner, 1999) concludes that although rewards can control people's behavior (indeed, that is presumably why they are so widely advocated) the primary negative effect of rewards is that they tend to forestall self-regulation. In other words, reward contingencies undermine people's taking responsibility for motivating or regulating themselves. When institutions like families, schools, businesses, and athletic teams focus on the short term and opt for controlling people's behavior, they may be having a substantially negative long-term effect. Furthermore, as noted by Kohn (1993), when organizations opt for the use of rewards to control behavior, the rewards are likely to be accompanied by greater surveillance, evaluation, and competition, all of which have also been found to undermine intrinsic motivation (Deci & Ryan, 1985).

3.3. Extrinsic Motivation and Creativity

Although Collins and Amabile (1999) focus first on love for the work as a crucial intrinsic motivator to be creative, a few researches are named supporting the statement that extrinsic motivation can also stimulate a person to be creative. The definition of extrinsic motivation is as follows: The motivation to engage in an activity primarily in order to meet some goal external to the work itself, such as attaining an expected reward, winning a competition, or meeting some requirement; it is marked by a focus on external reward, external recognition, and external direction of one's work (Crutchfield, 1962; Harlow, 1950 in Amabile & Collins, 1999; Hunt, 1965 in Collins & Amabile, 1999; Lepper, Greene, & Nisbett, 1973; Taylor, 1960 in Collins & Amabile, 1999). Amabile (1993) identified two types of extrinsic motivators: synergistic extrinsic motivators, which provide information or enable the person to better complete the task and which can act in concert with intrinsic motives; and nonsynergistic, extrinsic motivators, which lead the person to feel controlled and are incompatible with intrinsic motives (Collins & Amabile, 1999). According to Collins & Amabile (1999): *"Although intrinsic motivation may be inversely related to some types of extrinsic motivation (nonsynergistic), it may be combined additively with other, synergistic, extrinsic motivators. This concept of motivational synergy has contributed to a revision of the Intrinsic Motivation Hypothesis (now known as the Intrinsic Motivation Principle): Intrinsic motivation is conducive to creativity; controlling extrinsic motivation is detrimental to creativity, but informational or enabling extrinsic motivation can be conducive, particularly if initial levels of intrinsic motivation are high."* Overall Amabile and Hennessey (1998) suggest that creativity depends in large part on intrinsic motivation and that reward and other

extrinsic motivators can undermine both. Moreover, the conditions under which these effects occur are not highly restricted. In contrast to these findings Eisenberger and Cameron (1996) claim that generalized creativity can be boosted by small or nonsalient rewards. Eisenberger et al. (1999) assume that the effects of rewards on creativity are related to basic conceptions of human motivation. In their opinion, contemporary behaviorism, based on utilitarian assumptions, holds that various types of performance, including creativity, can be shaped to prescribed ends by the systematic presentation of reward. Behaviorally oriented experiments generally assess the effects of repeated reward made contingent on creativity, rather than the effects of the verbal promise of reward as used in cognitively oriented studies. A review of 20 behaviorally oriented studies concluded that novel performance was increased by repeated reward for divergent thinking (divergent thinking involves the production of varied responses to a problem or question that has multiple solutions, Eisenberger and Armeli, 1997) (Winston and Baker, 1985 in Eisenberger et al. 1999). Reward for divergent thinking in one task should have the important consequence of increasing the general tendency to behave creatively. Amabile (1983, p. 127) argued that the reported incremental effects of reward on divergent thinking resulted from instructions to perform creatively rather than from the incentive properties of the reward. Studies examining the effects of different instructions on creativity (e.g., 'be creative' versus 'be practical') indicate that participants respond more creatively when asked to be creative than when not so asked (Sternberg and O'Hara, 1997). Amabile (1983) also argued that the expectation of reward orients the individual toward goal-relevant stimuli, thereby reducing attention to "*the task itself and non-obvious aspects of the environment that might be used in achieving a creative solution*". This narrowing of attention would reduce the spontaneity and flexibility of performance

that results from high task involvement and contributes to creative performance (Lepper, Greene, & Nisbett, 1973). For example, *“if a child were offered a salient reward for drawing a picture of her own choosing, the child would think about the reward while performing the task and concentrate on the most efficient way to achieve it, resulting in less spontaneity and playful experimentation while drawing the picture”* (Eisenberger, Haskins, and Gambleton, 1999). Hennessey and Amabile, 1998) reported a study in which children painted pictures before constructing collages. Half of the children received a positive evaluation of their paintings before they began the collages. The remaining children received no evaluation. The researchers intended the reward for painting to establish a reward expectancy that would generalize to the collage task. This reward expectancy was predicted to reduce interest in both the painting and collage task and to lessen the creativity of the collages. As anticipated, the children who were rewarded for painting subsequently produced collages judged to be less creative than collages by children who did not receive the reward. According to Hennessey and Amabile (1998) the prevention of these decremented effects of reward on children’s creativity can only be done by specialized training in which children are *“helped to focus on intrinsic motivation and...taught explicit techniques for viewing external incentives as secondary to their own interest and learning.”* These accounts also asserts that tangible reward, such as money and other prizes, is more salient than verbal reward and therefore should produce greater detrimental effects on intrinsic task interest and creativity (e.g., Amabile, 1983; Deci & Ryan, 1985; Lepper et al., 1973).

Eisenberger, Haskins, and Gambleton (1999) propose that reward can either increase or decrease creativity depending on the individual’s discrimination of the kind of performance required to obtain the reward. Reward dependent on simple or

repetitive performance would discourage spontaneity of performance and reduce creativity. Because persons are rewarded more often for conventional performance in everyday life, they may perceive that a reward depends on conventional performance when offered a reward for performing a task without specification of the type of performance required. However an explicit positive relationship between creative performance and reward would increase creativity (Eisenberger, Haskins, and Gambleton, 1999). Eisenberger, Armeli, and Pretz (1998) examined how task instructions concerning the relationship between performance and reward affected creativity. Children produced more-highly creative drawings when they were told that novel performance was necessary to receive a monetary reward than when they promised money for unspecified drawing performance or when they were asked to produce novel drawing without the promise of pay. These and prior findings suggest that reward serves as a motivator; whether reward enhances conventional performance or creative performance depends on the individual's discrimination concerning the type performance that produces reward. The learned industriousness theory assumes that individuals learn which dimensions of performance are rewarded and generalize high or low effort more to these performance dimensions than to other dimensions in subsequent tasks (Eisenberger, 1992). Preadolescent learning-disabled students (rewarded in a token economy for reading with high accuracy) subsequently produced more accurate drawings and stories than did children who had been rewarded for reading with high speed or for merely completing the reading task. In comparison students who were rewarded for reading with high speed subsequently constructed stories more quickly than did children who had been rewarded for reading with high accuracy or for merely completing the reading task (Eisenberger et al. 1984 in Eisenberger & Armeli, 1997). Such dimensional learning can be applied to creative

performance. Receiving reward for novel performance should increase an individual's tendency to work hard at producing novel performance. In contrast, receiving reward for familiar performance should reduce an individual's tendency to generate novel behavior. The results of these and other studies (Eisenberger & Armeli, 1997, Eisenberger, Armeli & Pretz, 1998) suggest a contradicted view on the believe that any increase in performance that is due to salient reward produces a countervailing decrease in intrinsic creative interest (Hennessey & Amabile, 1988).

3.4. Effects of Evaluation on Creativity

The expectation of evaluation, evaluation itself, receipt of positive evaluation prior to the performance, reduced autonomy, competing for prizes to be offered, contracting for a reward to be received contingent on task engagement all generate lower levels of creativity (Collins & Amabile, 1999). But they name some circumstances in which extrinsic motivation, such as evaluation or rewards, could have no harmful effects on creativity. A number of studies, designed in the behavior modification tradition have shown positive effects of reward on various aspects of creative performance. In most of these studies participants were told how to succeed or 'be creative' on a particular type of task and were rewarded for increasing these behaviors. Specifically, many studies used some form of creativity test where the behaviors of interest were fluency (number of different responses), flexibility (variety of responses), elaboration (e.g. number of words per response), and originality (statistical infrequency of response). We used five general questions in this study to measure fluency, originality and flexibility. One of the questions was for example: *"How could students earn more money?"*

They pointed out that the benefits of reward, which is an extrinsic motivator (Collins & Amabile, 1999), on performance were most apparent on the behaviors that could be easily modified using an algorithmic or step-by-step, approach (i.e. elaboration, fluency and flexibility). When reward was found to enhance originality, projects had been explicitly instructed to try to generate unusual responses. In contrast, the previous work demonstrating an undermining effect of reward on creativity utilized more heuristic or open-ended tasks, such as writing a story or making a collage. When Amabile (1979) took one of these heuristic tasks (creating a collage) and made it algorithmic by telling subjects how to make a collage that would be rated as creative by judges, she found that *external evaluation increased creativity*. Instead of heuristics, our tasks were described in a Quantity condition (fluency), Quality condition (flexibility) and average uniqueness together with originality and feasibility of an answer as a measure of creativity (originality). The tasks were made algorithmic by asking the participants to give “as many answers as possible” (quantity) and “as good an answer as possible” (quality) to the different tasks. In this study the focus is on creativity: will performers be more creative in a situation in which they know they are evaluated than in situations in which no evaluation is taking place? In order to measure creativity it is necessary to know what creativity is as a concept. This will be discussed in the following chapter.

4. Creativity

“The whole difference between construction and creation is this; that a thing constructed can only be loved after it is constructed; but a thing created is loved before it exists.”

— Charles Dickens,
1812-1870 British Novelist

The biggest pleasure for a worker is to participate fully in their job. They need to be completely present in order to achieve satisfaction. This means workers need to have the freedom to be the best they can be. All the tools a worker needs to deliver a quality product must be made available. A worker who feels underemployed is not happy and productive. This is where creativity comes in, as humans we are creative beings. It is a fundamental quality we have and it is also necessary in the workplace.

Considerable research has been conducted in this area. Dr. Teresa Amabile, an authority on individual, team, and organizational creativity and author of *Creativity in Context*, defines creativity as a “process that results in the creation of a novel idea or product that is appropriate, useful, or satisfying to a particular group at a particular time.” [3] Like most of the creativity experts and researchers we’ve studied [4], we believe that everyone is creative and that people demonstrate different kinds of creativity and different levels of creativity. This means one should be able not only to test for creativity, but also to test for specific kinds of creativity. Further, once these creative individuals have been identified, it is possible to train them to further enhance their creativity skills (Amabile, 1996, p.38.)

Creativity is among the most complex of behaviors. The definition and assessment of creativity has long been a subject of disagreement and dissatisfaction among psychologists, creating a criterion problem that researchers have tried to solve in a variety of ways (Amabile, 1996). According to the dictionary creativity is

characterized by *originality* and *expressiveness* (<http://dictionary.reference.com/>).

Many of the earliest definitions of creativity focused on the creative process. Perhaps the most remarkable process definition is John Watson's: *How the new comes into being: one natural question often raised is: How do we ever get new verbal creations such as poems or a brilliant essay? The answer is that we get them by manipulating words, shifting them about until a new pattern is hit upon.* (Watson, 1928, p.198 in Amabile, 1996). Others like Guilford (1950) have focused in terms of the person, where he refers creativity to abilities that are most characteristic of creative people. According to most definitions innovation may involve creativity, but not all innovations will be creative (West & Farr, 1990). Despite the implicit emphasis on the person in creativity research, most explicit definitions have used the creative *product* as the distinguishing sign of creativity (Amabile, 1996). It seems to be influenced by a wide array of developmental, social, and educational experiences, and it manifests itself in different ways in a variety of domains. (Sternberg & Lubart, 1999, p.62). "A product is creative when it is (a) novel and (b) appropriate. A novel product is original, not predictable. The bigger the concept, and the more the product stimulate further work and ideas, the more the product is creative." Sternberg & Lubart (1999). Lubart (1994) (p.11, in Sternberg & Lubart 1999) also defines creativity as the ability to produce work that is both novel (i.e. original, unexpected) and appropriate (i.e. useful, adaptive concerning task constraints).

With regard to the confluence of components, creativity is hypothesized to involve more than a simple sum of a person's attained level of functioning on each component. First there may be a threshold for some components (e.g. knowledge) below which creativity is not possible, regardless of the levels attained on other components. Second partial compensation may occur in which strength on one

component (e.g. motivation) counteracts a weakness on another component (e.g. environment). Third, interactions may also occur between components, such as intelligence and motivation, in which high levels on both could multiplicatively enhance creativity. According to Paulus and Nijstadt (2003) creativity is therefore often defined as the development of original ideas that are *useful* or *influential*.

Munkes & Diehl (2003) have found that individuals in brainstorming groups perform better and generate more creative ideas when competition and winning is rewarded. Therefore we come to our main issue: We hypothesized that creativity increases in a maximal performance task. To rate creativity we assume that creativity is a product of originality and feasibility (Paulus en Nijstadt, 2003). Beersma et al. (in press) created a scale to measure these kinds of creativity tasks. The answers were rated per dimension using the "sort-resort" procedure adapted from Hackman et al. (1967; see also: Kelley & McGrath, 1985; Van Dyne & Saavedra, 1996). For each dimension, two judges independently sorted the answers into seven categories representing a scale value from 1 "very low on this dimension" to 7 "very high on this dimension". (Defining the ratings of the two raters as in agreement whenever the ratings fell within one point of each other (Stroebe & Diehl, 1987), the raters agreed in 99,96 % (for Originality) and 99,98% (for Feasibility) of all instances. Performance scores were therefore aggregated over the two raters.

5. Method

Sample

The majority of the 232 participants (149 women and 83 men) consisted of students from the University of Amsterdam, 18 students from other universities and 3 non-students. Six participants were excluded because of missing data and not filling in the questionnaires completely, the original sample included 238 participants. The participants were rewarded either 10-euro cash or 1.5 credits in study points. The mean age was 21.22414 (S.D. =3.17617, range = 17 to 51). The participants registered for a session and groups varying from 2 to a maximum of 10 people were formed for each session, depending on the amount of registrations per session. There were no (ANOVA) significant differences ($p > 0.1$) between groups with regard to age.

Design

Subjects were asked to answer 5 open-ended general questions. They had 5 minutes to complete each question. An example of one of the questions is: 'How can we stop the pollution of the environment?' The other open-ended questions were: 'How can we solve the traffic problem in the Randstad?' 'How can we prevent heroin addicts to participate in criminal activities?' 'How can students make more money?' 'How can unemployment be solved?'

The first 120 participants were told to come up with as many answers as they could (Quantity condition) and the other 118 were told to come up with an answer as good as possible (Quality condition). In both conditions the experimenters varied the sequence of the different problems. In total 4 rotations took place.

The fourth question was announced to be the most important question of all five questions. In order to simulate maximum performance on this question the

subjects were first told that the best answer of that week would be rewarded with 20 euro. During the fourth question the experimenter performed an evaluation by walking through the classroom and looking over the participant's shoulder. Before and after the fourth question the participants were asked to fill in the TMPS. The TMPS functioned as a manipulation-check to see if the participants felt evaluated (e.g. It was very obvious to me that my performance was being evaluated).

Before the participants answered the questions they had to fill in the PANAS where they could describe at a scale of 1 to 5 the emotions they experienced the last two weeks. The participants then had to fill in an involvement scale varying from 1 to 5 on how much they liked a certain problem, how much they find that problem interesting, how much they find it realistic and how involved they are with this problem. To prevent a priming-effect the involvement scale consisted of 5 pseudo problems (How can we solve the parking-problems in the Randstad?) and the 5 problems eventually used during the experimental sessions. After the fifth and final task they had to fill in the involvement scale again and the experimental session ended with a demographic questionnaire. The level of difficulty was considered as equal for all the problems. Rotations in sequence of administration of the problems were executed as a manipulation check, to prevent a topic confound.

First the frequency was summed of each idea given on a particular question (fluency). About the traffic problem in the Randstad for example the answer 'to pay tax for using the road', labeled with 'FILE 1', was mentioned 49 times by the participants. Second, the uniqueness score for each answer per person was calculated to measure creativity.

A second way to measure the creativity of the participants' answers was to rate their answers on Originality and Feasibility separately by two independent raters

on a scale from 1 to 7, 1 being a low score and 7 being a high score. The percentages of agreement on both components of creativity using the formula $100(1-2d/n(n-1))$ (see Stroebe & Diehl, 1987 for a similar procedure) were calculated. 'd' is the number of discrepancies between the two raters. 'n' is the number of scores given by the two raters. On the Originality-rating the two raters agreed 99,96 % and on the Feasibility-rating 99,98%. The two ratings were defined as in agreement whenever both fell within one point of each other.

Instruments

- (1) The TMPS, measuring the feeling of being evaluated was used. TMPS consists of five subscales: situational characteristics (Klehe & Anderson, 2004b). These situational characteristics (direction; level; persistence; evaluation; instruction) make it possible to measure performance such as typical and maximum performance.
- (2) Involvement scale is used to see how much the participants were into a question. How much they liked it and in which level they were involved in the questions as used by Rietzschel (2005).
- (3) Five general problems were used as open-ended tasks. The Experimenters made up the tasks.
- (4) A stopwatch to make sure every question in the experiment took not more than five minutes.
- (5) A demographic questionnaire was used to provide extra information about the sample.
- (6) PANAS, participants had to fill in the Positive and Negative Affect Schedule measuring the mood state of the participants. The PANAS was excluded for analyses.

Procedure

The experiment took place in the lab where the participants joined a one hour experimental session. Under supervision of the experimenter the participants were taken to a classroom to perform the experiment. The participants were asked not to sit right next to each other but to leave a space in between. This was done to prevent participants to do the tasks together. The experimenters told the subjects that they would have to work on five different tasks. They were told that it was allowed to write down anything that came to mind, and that no answer was either good or bad.

6. Results

First we summed the frequency of each idea given on a particular question e.g. on the File (traffic congestion) question 'File1' (a specific answer given) was mentioned 49 times by the participants. Second *the uniqueness score* for each answer and for each person was calculated by dividing 1 by the frequency of each specific answer given. This was done for all answers a participant had given after which all these scores were summed and divided by *the uniqueness score*. We used the uniqueness score to measure creativity in the Quantity condition (Condition 1) because in that condition we requested the participant for quantity of ideas and calculating the uniqueness by tallying the frequency seems to be most adequate. See the Method section where we refer to Originality and Feasibility for the second way we used to measure creativity.

The paired sample t-test was conducted on both conditions (Condition 1= Quantity, Condition 2= Quality). Position one and two are excluded because the main purpose of the first two questions was to let the participant get used to the tasks and

create a typical performance atmosphere. More important are the differences between position three, four and five. Where positions three and five represent the typical performances questions and four the maximum performance question. Between these three positions the experimenters have found each time a difference between the maximum and typical performance. The maximum performance question always showed a higher level of performance than the two typical questions, although this difference was not significant every time. The significant differences are per rotation are presented below.

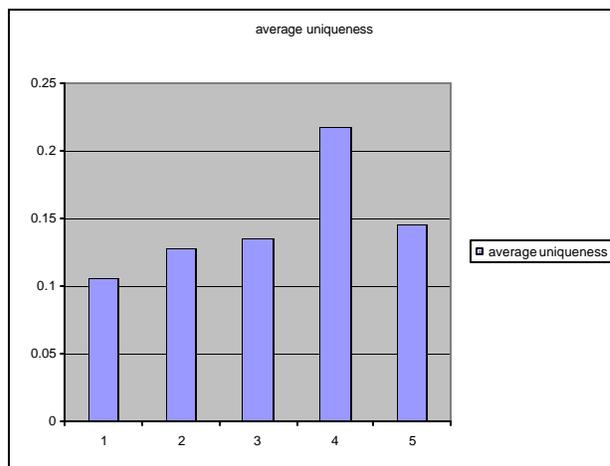
The tables and graphs can be found in the appendix. Tables 1, 2, 3 and 4 present the significances after a paired sample t-test for the uniqueness score of the answers given by each participant, which was conducted on both the Quantity and Quality condition for each of the five groups.

When we look at idea-fluency (Norlander, Bergman, & Archer, 1998) participants produced a higher number of ideas in the Maximum condition than in the quantity condition no matter the topic on position 4. This means that participants came up with more ideas every time and evaluation took place compared to when no evaluation took place.

Comparing the means of the average uniqueness scores of all the participants in the quantity condition (N= 118) showed that there was a significant difference. Specifically, between the uniqueness scores of the answers given to the questions on position 3 and 4 ($t = -4.369$, $df = 117$, $p < 0.00025$, one-tailed) and position 4 and 5 ($t = 4.346$, $df = 117$, $p < 0.00025$) significant differences were found. The uniqueness scores of the answers in the quantity condition of the no-rotation group (N= 88) also differed significantly between position 3 and 4 ($t = -4.391$, $df = 87$, $p < 0.00025$, one-tailed) and position 4 and 5 ($t = 2.742$, $df = 87$, $p = 0.007$). In the first rotation group (N= 30)

in the quantity condition no significant difference was found between position 3 and 4 ($t = -1.431$, $df = 29$, $p = 0.163$) but a significant difference was found between position 4 and 5 ($t = 4.004$, $df = 29$, $p < 0.00025$). It could be due to the small sample size of this rotation group that no significant difference was found between position 3 and 4 but comparing the means implies that less unique answers were given on position 3 than on position 4 ($t = -1.431$). Even though the pattern of means (Table 1) shows that there is a significant difference between the maximum condition and some of the typical conditions in the quantity condition, some of the means of the typical conditions also showed significant differences. Overall we found that the participants in the quantity condition produced more unique ideas in the maximum condition. This gives us support for the hypothesis made by Sackett (1988) (Hypothesis 5).

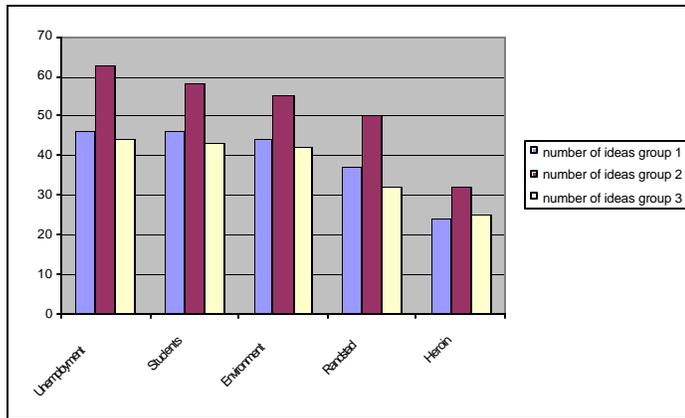
Figure 2



In order to measure creativity in the quality condition a different pattern of outcomes was found. Looking at idea-fluency we see that certain topics produced more ideas. Specifically, when participants were asked to give as good an answer as possible most ideas were given to the topic Unemployment followed in most instances by the

Student problem. The following table (Table 2) shows the number of ideas given on each topic.

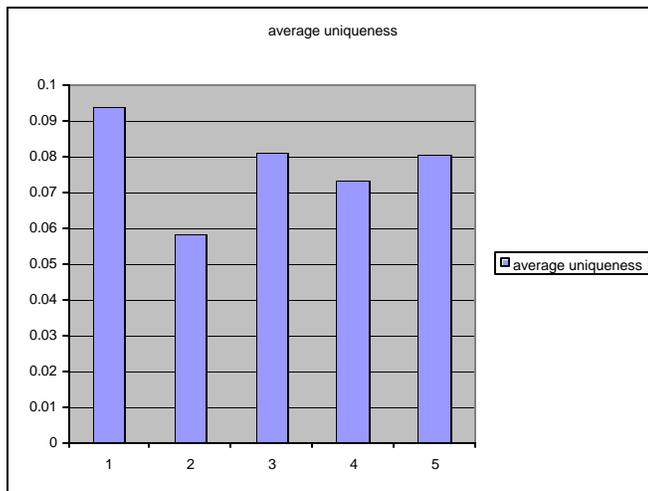
Figure 3



Note: Unemployment on position 3, 5 and 1 respectively, Students on position 4, 1, and 2 respectively, Environment on position 1, 3 and 4 respectively, Randstad =(Traffic congestion) on position 2, 4 and 5 respectively, Heroin on position 5, 2 and 3 Respectively. N= 115.

When we look at position 3, 4 and 5 we see that the participants of the Quality condition (N= 115) surprisingly gave less unique answers when in the maximum position compared to the typical position. These differences were not significant though.

Figure 4



For Feasibility per rotation we didn't find any differences. Feasibility of the whole sample we did find significant differences in the quality condition: between position 3 and 4 ($t = -3.229$, $df = 114$, $p = 0.00025$) and between position 4 and 5 ($t = 2.833$, $df = 114$, $p = 0.00025$).

Table 1 shows that the manipulation (TMPS) yielded a somewhat poorer fit under the typical performance condition and an acceptable fit under the maximum performance condition. Under the typical performance condition, the goodness of fit index (GIF) = .87, the adjusted GIF index (AGIF) = .82, the incremental index of fit (IFI) = .88, the comparative fit index (CFI) = .88, and the Root Mean Square Error of Approximation (RMSEA) = .08, accompanied by a relatively narrow 90% -confidence interval (.07 to .09). Under the maximum performance condition, there was a GIF of .90, an AGIF of .86, an IFI of .93, a CFI of .93, and a RMSEA of .07, accompanied by a relatively narrow 90% -confidence interval (.05 to .08) (Klehe & Anderson, 2004b).

Table 1*Correlations between six subscales of the TMPS*

Subscale	Mean	S.D.	Dir.	Level	Persis	Eval.	Instr.	Dura.
Sample typical performance (n = 237)								
1. Direction	4.26	.60	.68	.72*		.01	.08	-.06
					.54**			
2. Level	3.70	.71		.80		.06	.12	-.12
					.45**			
3. Persistence	3.52	.83			.69	.02	.02	-.08
4. Evaluation	2.75	.89				.71		-.09
							.23**	
5. Instruction	2.34	1.04					.85	-.15*
6. Duration	4.07	.79						.77
Sample maximum performance (n = 237)								
1. Direction	4.27	.61	.68	.72**		.34**	.14*	-.08
					.48**			
2. Level	3.83	.77		.84		.38*	.16*	-.15*
					.44**			
3. Persistence	3.60	.88			.76	.23**	.13	-.19**
4. Evaluation	3.99	.84				.78	.12	-.08
5. Instruction	3.88	1.04					.79	-.01
6. Duration	4.09	.83						.81

Note: Values on the diagonals represent the internal consistencies; *: p < .05; **: p < .01

7. Discussion

The differences in Typical and Maximum performances also exist in a creative task. Although these differences were not always found, overall the results show that evaluation can increase creativity: participants came up with more ideas every time and evaluation took place compared to when no evaluation took place (H1 and H2).

When we look at the two conditions separately we see that the participants of the Quality condition surprisingly gave less unique answers when in the maximum position compared to the typical position (H3 and H4).

Hypotheses	Outcome
H1: If a task is evaluated creativity increases. (Maximum performance)	Supported
H2: If a task is not evaluated creativity decreases/varies. (Typical performance)	Supported
H3: If a qualitative task is evaluated creativity increases. (Maximum performance, Quality condition)	Rejected
H4: If a qualitative task is not evaluated creativity decreases/varies. (Typical performance, Quality condition)	Rejected
H5: If a quantitative task is evaluated creativity increases. (Maximum performance, Quantity condition)	Partially Supported
H6: If a quantitative task is not evaluated creativity decreases (Typical performance, Quantity condition)	Partially Supported

There are several explanations for these findings. A topic confound could have occurred. The participants could have preferred one topic above another. Or another

explanation could be the instructions given were not clear enough. In the maximum position they were asked to give as good an answer as possible and to be creative. As an external motivator they were promised an extra reward if they did well compared to the other participants. Because of this instruction their attention might have been shifted from being creative to just being very good, which is why they gave less unique answers. Or according to the theory of Amabile (1985, 1996, 1998), because there is a reward being promised, the creativity including Originality decreased.

In the Quantity condition results showed that the participants produced more unique ideas in the maximum condition (H5 and H6). These findings support Eisenberger et al. (1999) where they argued that an explicit positive relationship between creative performance and reward would increase creativity.

Although the results show us some significant differences, these differences are not enough to create any conclusions regarding Typical and Maximum performances and creativity. The effort to motivate the participants (via various incentives like explicit instructions to do their absolute best, evaluation and reward) could have been lost because of these following reasons. First, in condition 1, the questions were limited in rotation. This resulted in creating unequal groups, which were not comparable enough. Also, the level of difficulty of different questions could be incomparable. Second, there could have been 'specializations' on different tasks. Some participants could have had more affinity with some of the topics and be more productive and maybe more creative on those questions than compared to other questions. The third point of criticism is 'Social loafing'. Because every session had more than one participant, they could have been influencing each other, for example some participants might have stopped writing before the time stopped because others did so.

Another problem that could have occurred is the difficulty of manipulating performance situation into good predictors of Typical and Maximum performance. Klehe and Anderson (2004a & 2004b) used an administrative task in a laboratory setting, they found that people worked significantly harder (measured as direction, level, and persistence of effort) during maximum, compared to typical performance periods. Motivational measures such as self-efficacy and task valence were significantly better predictor of maximum than of typical performance. A potential reason for this lack of empirical research on an obviously important topic is the difficulty to manipulate performance situations in a way that create truly parallel typical and maximum performance situations (Sackett, personal communication in Klehe and Anderson 2004b). Our manipulation check (TMPS) also shows us that Typical performance was somewhat a poorer fit compared to Maximum performance. Overall are the reliabilities between the six -subscales of the TMPS generally satisfactory (Klehe and Anderson, 2004b). Although the scale of 'duration' is falling short: it fails to distinguish Typical from Maximum situations. Maybe the distinction between Typical and maximum performance would not matter at all that much, if a number of empirical studies had not revealed that the relationship between employees' Typical and maximum performance on exactly the same task can be low (Klehe and Anderson 2004b, 2004a, Sackett et al, 1988). Another limitation of the current work on the TMPS is that data rely exclusively on students and/or laboratory data. That could also be one of the limitations on this research. Looking at questions and the setting of the experiment there was a lack of connection with the field.

We arrive at the question: what is better for creativity, extrinsic motivation or intrinsic motivation? The answer is not black or white, like every answer in the field of psychology it varies within many factors and situations. Amabile & Collins (1999)

are right about creativity and intrinsic motivation, when they argue that one should have some kind of inner passion or love for the work you are delivering to be creative. The greatest things created in this world are due to this love or passion from inside oneself, but one cannot conclude that this is the only situation where one can be creative. There are several other situations where one can be motivated extrinsically (reward, money, promotion etc) and be highly motivated and hence highly creative, provided that (according to Eisenberger et al., 1999) there exists an explicit positive relationship between creative performance and reward. In a work environment it is the job of the supervisor or the manager to create these kinds of relationships whenever the employee is supposed to deliver creative work. More strongly put, one has to maintain this relationship by making sure that it is clear for the employee to see his goal and the process (production) he has to go through to reach that goal, and to make sure that goal stays interesting or attractive enough to motivate the employee. More research in this field is required to explore the relationship between creativity and performance, specifically Typical and Maximum performance. The study conducted for this paper could be reproduced more accurately. By using a sample which does not show any topic confounds or using more neutral topics. The sessions could take place individually to avoid interference between participants. One could also look for other questions or tasks that could measure creativity in a better manner. One could also to do field research instead of using laboratory setting. Using real-work problems and the expectancy of work-related rewards may cause the participants to be more motivated and serious. The distinction between Typical and Maximum performance may be less vital in a dynamic setting requiring continuous learning and mutual adaptation than in a relatively static job (Klehe and Anderson, 2004b). That is why future field research should be done in static jobs like call-center

employees, security guards, clerks etc. Managers and supervisors could use these studies for outlining under which conditions Maximum performance conditions may harm rather than foster performance. Because not every individual shows his best abilities in the Maximum performance condition, caused by for an example fear or other inhibitory reactions. Maximum performance situations may demand some additional skills needed to a lesser extend during typical performance, such as self-management skills in the sense of the ability to regulate one's thoughts and emotions when under pressure (Klehe and Anderson, 2005). This can lead to wrong selection or promotion decisions. Concluding this research area has enough potential for future studies and therefore calls for substantial additional research effort.

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Appendix

Table 2
Average Uniqueness
Condition 1 Quantity 1-90

No rotation:

	Mean	S.D.	N
RANDSTAD	0.101	0.107	87
ENVIRONMENT	0.150	0.137	120
HEROIN	0.127	0.121	81
UNEMPLOYMENT	0.216	0.145	147
STUDENTS	0.164	0.114	128

Note: Significance level equals to or less than 0.05 ($p=0.05$), $df=87$, $N=88$

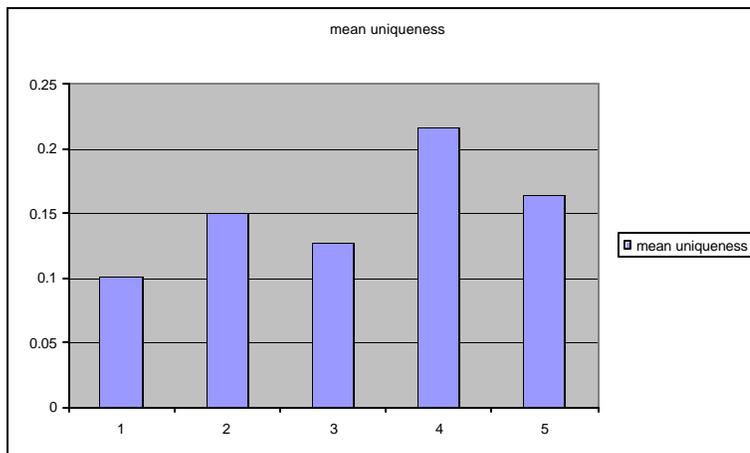


Table 3
Average Uniqueness
Condition 1 91-120

Rotation 1:

	Mean	S.D.	N
ENVIRONMENT	0.127	0.121	67
RANDSTAD	0.072	0.057	48
UNEMPLOYMENT	0.172	0.143	66
STUDENTS	0.238	0.189	99
HEROIN	0.105	0.105	55

Note: Significance level equals to or less than 0.05 ($p=0.05$), $df=29$, $N=30$

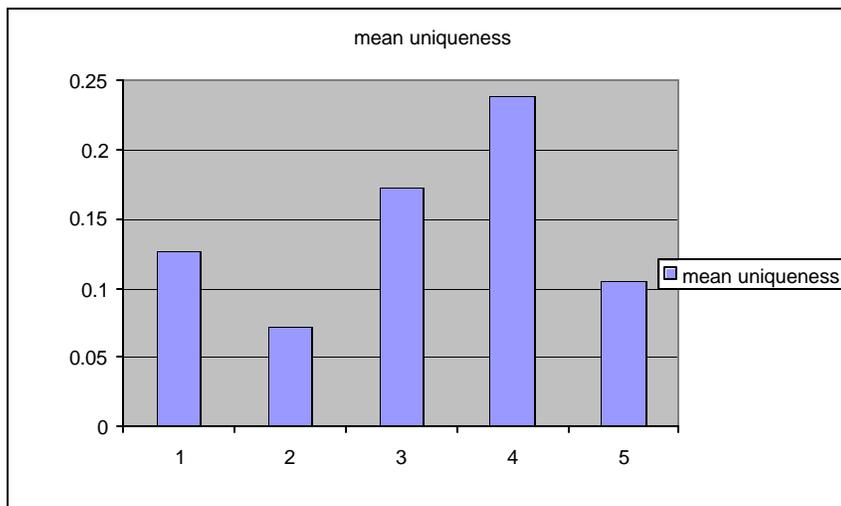


Table 4
Average Uniqueness
Condition 2 Quality 121-159

Rotation 2:

	Mean	S.D.	N
ENVIRONMENT	0.056	0.052	44
RANDSTAD	0.059	0.069	37
UNEMPLOYMENT	0.115	0.126	46
STUDENTS	0.059	0.049	46
HEROIN	0.042	0.055	24

Note: Significance level equals to or less than 0.05 ($p=0.05$), $df=36$, $N=37$

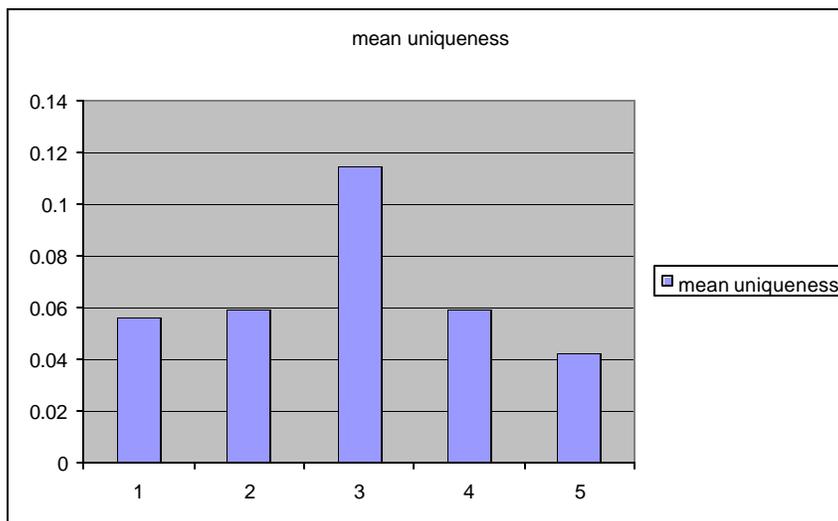


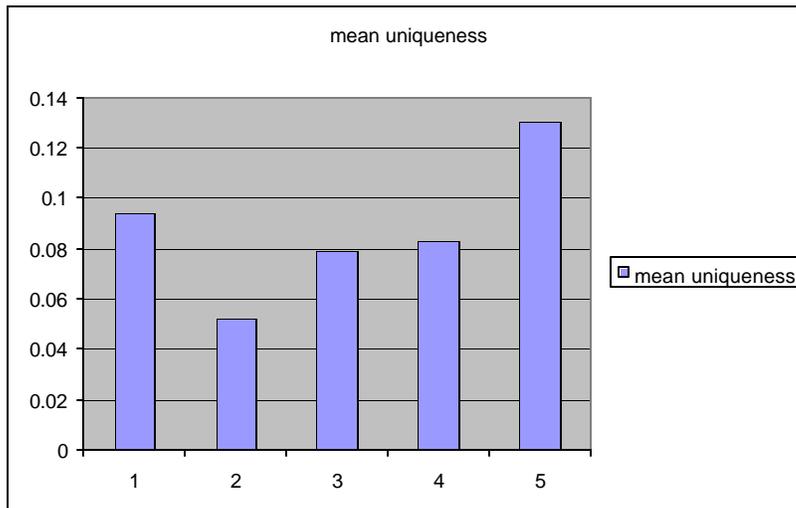
Table 5

Average Uniqueness Condition 2 160-210

Rotation 3:

	Mean	S.D.	N
STUDENTS	0.094	0.114	58
HEROIN	0.052	0.072	32
ENVIRONMENT	0.079	0.078	55
RANDSTAD	0.083	0.090	50
UNEMPLOYMENT	0.130	0.125	63

Note: Significance level equals to or less than 0.05 (p=0.05), df=50, N=51



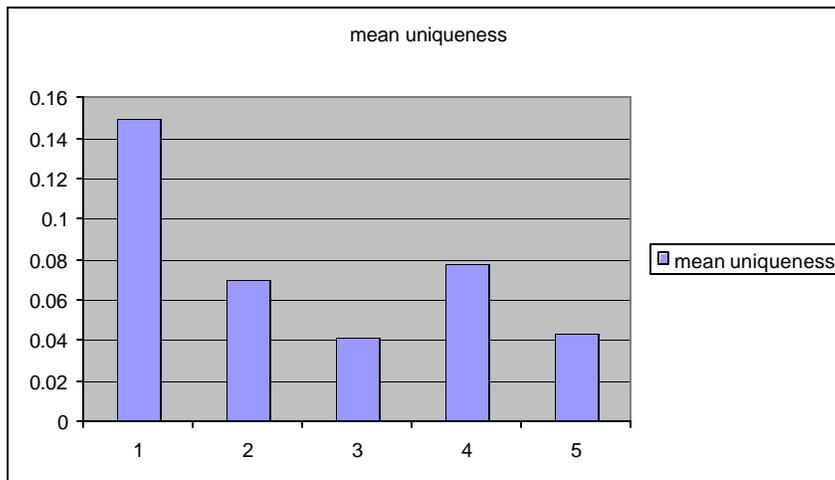
Average Uniqueness

Condition 2 211-238

Table 6 Rotation 4:

	Mean	S.D.	N
UNEMPLOYMENT	0.150	0.189	44
STUDENTS	0.070	0.655	42
HEROIN	0.041	0.253	25
ENVIRONMENT	0.078	0.107	43
RANDSTAD	0.043	0.040	32

Note: Significance level equals to or less than 0.05 ($p=0.05$), $df=26$, $N27$



Simple scores

Condition 1 Quantity 1-90

No rotation:

Table 7 Feasibility

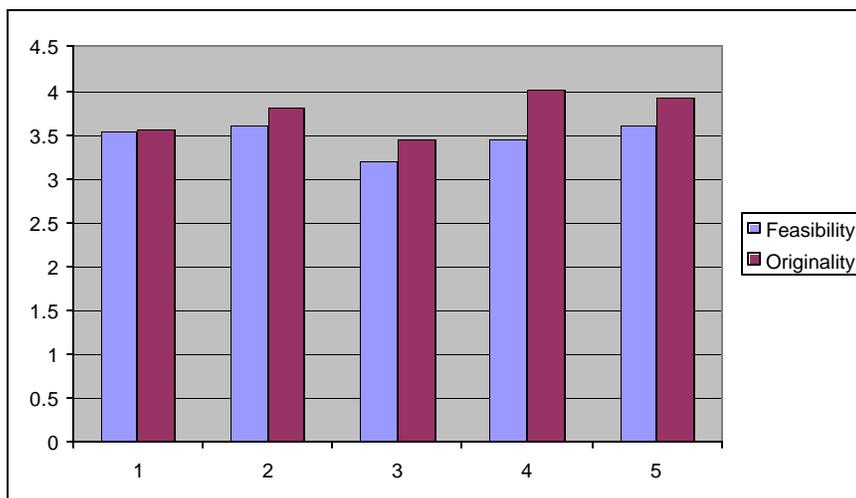
	Mean	S.D.	N
RANDSTAD	3.534	0.490	87
ENVIRONMENT	3.608	0.554	120
HEROIN	3.193	0.482	81
UNEMPLOYMENT	3.449	0.621	147
STUDENTS	3.602	0.612	128

Note: Significance level equals to or less than 0.05 ($p=0.05$), $df=87$, $N=88$

Table 8 Originality

	Mean	S.D.	N
RANDSTAD	3.563	0.805	87
ENVIRONMENT	3.608	0.767	120
HEROIN	3.193	0.844	81
UNEMPLOYMENT	3.449	0.715	147
STUDENTS	3.602	0.786	128

Note: Significance level equals to or less than 0.05 ($p=0.05$), $df=87$, $N=88$



Simple scores
Condition 1 91-120
Rotation 1:

Table 9 Feasibility

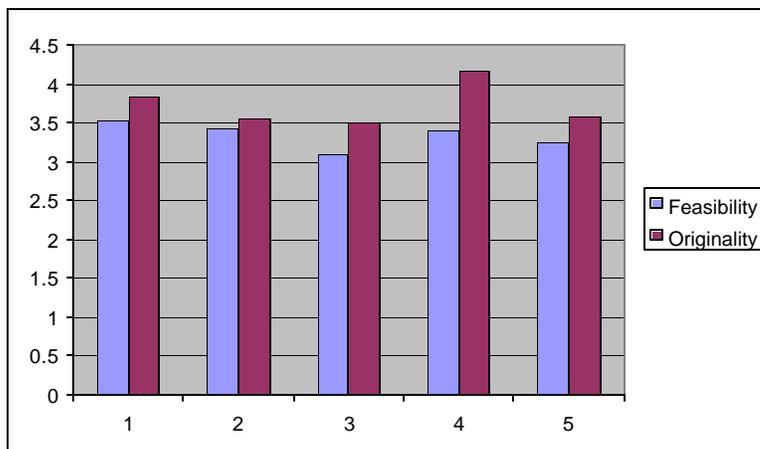
	Mean	S.D.	N
ENVIRONMENT	3.533	0,370	67
RANDSTAD	3,433	0.079	48
UNEMPLOYMENT	3.100	0.498	66
STUDENTS	3.400	0.747	99
HEROIN	3.250	0.365	55

Note: Significance level equals to or less than 0.05 (p=0.05), df=29, N=30

Table 10 Originality

	Mean	S.D.	N
ENVIRONMENT	3.833	0.607	67
RANDSTAD	3.550	0.480	48
UNEMPLOYMENT	3.517	0.701	66
STUDENTS	4.167	0.711	99
HEROIN	3.583	0.617	55

Note: Significance level equals to or less than 0.05 (p=0.05), df=29, N=30



Simple scores
Condition 2 Quality 121-159
Rotation 2:

Table 11 Feasibility

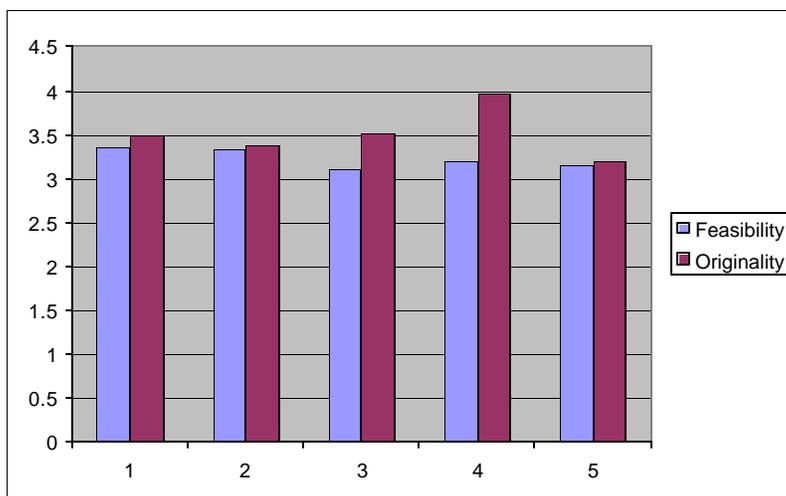
	Mean	S.D.	N
ENVIRONMENT	3.351	0.406	44
RANDSTAD	3.338	0.472	37
UNEMPLOYMENT	3.108	0.529	46
STUDENTS	3.203	0.606	46
HEROIN	3.149	0.370	24

Note: Significance level equals to or less than 0.05 (p=0.05), df=36, N=37

Table 12 Originality

	Mean	S.D.	N
ENVIRONMENT	3.500	0.866	44
RANDSTAD	3.365	0.871	37
UNEMPLOYMENT	3.514	0.862	46
STUDENTS	3.959	1.204	46
HEROIN	3.203	0.629	24

Note: Significance level equals to or less than 0.05 (p=0.05), df=36, N=37



Simple scores
Condition 2 211-238
Feasibility
Table 13 Rotation 4:

	Mean	S.D.	N
UNEMPLOYMENT	3.259	0.544	44
STUDENTS	3.333	0.439	42
HEROIN	3.148	0.362	25
ENVIRONMENT	3.426	0.454	43
RANDSTAD	3.352	0.304	32

Note: Significance level equals to or less than 0.05 (p=0.05), df=26, N=27

Table 14 Originality

	Mean	S.D.	N
UNEMPLOYMENT	3.815	0.911	44
STUDENTS	3.537	0.831	42
HEROIN	3.130	0.674	25
ENVIRONMENT	3.870	0.728	43
RANDSTAD	3.667	0.734	32

Note: Significance level equals to or less than 0.05 (p=0.05), df=26, N=27

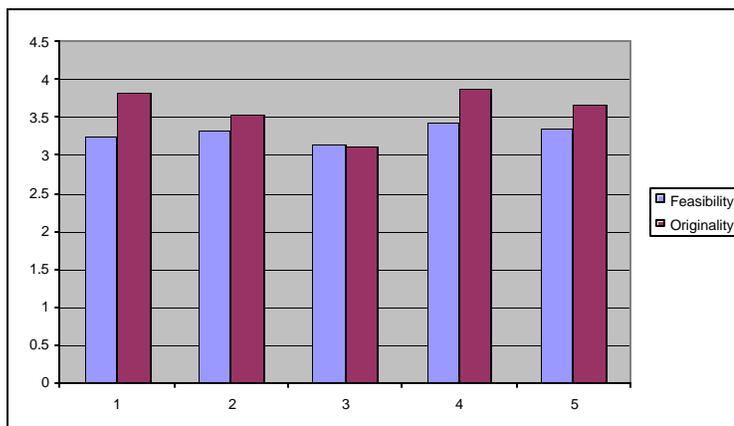


Table 15 items of Typical-Maximum Performance Scale (TMPS)

1	2	3	4	5	Factor
Strongly disagree			Strongly agree		
1.					Direction
2.					Direction
3.				(<i>r</i>)	Direction
4.					Level
5.					Level
6.				(<i>r</i>)	Level
7.					Level
8.					Persistence
9.				(<i>r</i>)	Persistence
10.				(<i>r</i>)	Persistence
11.					Evaluation
12.				(<i>r</i>)	Evaluation
13.					Evaluation
14.				(<i>r</i>)	Instruction
15.				(<i>r</i>)	Instruction
16.					Instruction
17.				(<i>r</i>)	Duration
18.				(<i>r</i>)	Duration
19.				(<i>r</i>)	Duration
Subscale duration original version					
17.					Duration
18.					Duration

Note. (*r*) = reversed scoring. This scale is still under development. Please contact Ute Christine Klehe to check for an updated version.