

The influence of transactional or transformational  
leadership on individual creativity of high school  
teachers.

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## Abstract

A lot of research has been done about the effects of leadership, also on the creativity of their followers. But little is known about these effects in high schools. This survey inquired if there is an effect of the perception of being led in a particular way on individual creativity of Dutch high school teachers. The perception of being led in a particular way, as well as the individual creativity was measured using a questionnaire. According to this questionnaire, leadership was defined as transactional or transformational. Creativity was seen as the ability to see different opportunities and solutions. Job autonomy and cognitive team diversity were included in the analyses, to avoid a possible moderating effect. Using data from 121 teachers, both the transactional and transformational type of leadership had a significant positive effect on individual creativity; this correlation is stronger for transformational leadership (respectively  $r = .311$  and  $r = .243$ ). Job autonomy had a significant moderating effect in the correlation between transformational leadership and individual creativity. No significant moderating effect was found of cognitive team diversity.

In conclusion, this study showed that both the leadership styles substantially affect creativity of Dutch high school teachers. Taken this into account, a transformational leader may improve a more creative atmosphere looking at the stronger correlation.

Key words: transformational leadership; transactional leadership; creativity; high school teachers

## **Introduction**

A lot of research has been done about the importance of a good leader. Leadership is needed to ensure competence, control and to keep balance between powers within a group (Zalenznik, 2004). It is crucial for companies to get a competitive advantage (McCall, 1998 cited in Day, 2000; Vicere & Fulmer, 1998 cited in Day, 2000). Leadership contains one leader and one or more followers (Sosik & Godshalk, 2000). People are different from each other; this causes a lot of dynamics in a group. This asks for good leadership. Many researchers saw differences in types of leadership and found divergent ways to name these. Two commonly used kinds of leadership are transactional and transformational leadership. Transactional leadership contains monitoring performance of employees where the leader makes clear what is expected (Nederveen Pieterse, van Knippenberg, Schippers, Stam, 2010). It is based on a relationship where employees do their job in exchange for an expected reward (Kirby, Paradise & King, 1992). A transformational leader motivates employees or followers and as a leader he does more than he has to. A transformational leader motivates employees to do more and better than they think they can do and to look beyond their morals and values (Nederveen Pieterse, van Knippenberg, Schippers, Stam, 2010). He wants to stimulate learning and to see new perspectives (Hater & Bass, 1988).

Bass (2000) found that transformational leadership improves commitment, effectiveness and creativity amongst employees. As for leadership, creativity of employees is important to get competitive advantage (Oldham & Cummings, 1996) and to survive as a company (Shally & Gilson, 2004). Shally and Gilson (2004) define creativity as an outcome. It is a production of new ideas or products in a particular realm (Amabile, Conti, Coon, Lazenby & Herron, 1996). Creative employees will have new ideas about products and/or procedures and help with important decisions or implementations (Oldham & Cummings, 1996). Creativity is positively influenced when management encourages creative thinking

(Amabile, Conti, Coon, Lazenby & Herron, 1996). Therefore leaders have an important role in supporting individual creativity (Mumford, Scott, Gaddis & Strange, 2002).

Most of the time creativity gets killed. Not because supervisors do not see the value of creativity. Due to every day work in particular environments (focus on time and money) creativity will fade into the background (Amabile, 1998). More influential factors on creativity are job characteristics, goals, acceptable recourses, rewards, cognitive team diversity and job autonomy (Shally & Gilson, 2004). Like in a company also in schools ideas about creativity in the classroom is a hot subject. Not a lot of research has been done in a school environment about the kind of leadership and how this may influence the creativity of teachers. This will be the central topic of this paper.

Some research has been done about the influence of a leader to the creativity of employees (Shally & Gilson, 2004). Shin and Zhou (2003) found a positive effect of transformational leadership on creativity. This was not investigated in a school environment but in Korean companies. Nederveen Pieterse, van Knippenberg, Schippers and Stam (2010) investigated the relationship between the leadership style and innovative behavior in The Netherlands, but this was conducted in a government agency. A school environment is different from a company or organization. Teachers have to deal with all kinds of children, dropouts, professionalizing, colleagues with different backgrounds etc. This may lead to different and/or novel outcomes.

This research will inquire if the kind of leadership influences creativity of high school teachers in the Netherlands. Leadership in schools has become more important because these leaders are responsible for the quality of education and the effectiveness within a school (Krüger, 2009). Due to Dutch politics teachers and school leaders have to go along with a lot of laws and rules. There are core headlines high schools have to follow for every subject (SLO, n.d.). Pupils have to make a state exam to get their final diploma (Overheid.nl, 2013). Also schools have their own values and rules they want to pursue. It is important how the school leader will cope with these rules and what is expected of teachers. A school leader will

definitely want to pursue these state goals to get listed as a good school, but what will be the effect on creativity of the teachers? In a classroom a creative schoolteacher is needed to inspire their pupils. Creative instruction will improve flexible thinking of students, it will help to express them freely and to have an active role when participation is needed (Hornig, Hong, ChanLin, Chang & Chu, 2005). But what kind of leader is common in high schools and which kind improves the creativity of the teachers?

### **Transactional and transformational leadership**

A transformational leader seeks for the best outcome for both the leader and follower. Follower and leader both put a lot of effort in the things they do to both get to a higher level, without any rewards (Larson, 2008). A transformational leader motivates his followers and tries to elevate their morals (Bass, 1999). This motivation makes the followers want to do more than is originally expected from them (Hater & Bass, 1988). It makes them trusting the leader and they will most likely admire and respect him (Yukl, 1999). Followers and leaders will put their own self-interest aside, and will do what is good for the group or the organization (Bass, 2000). Krüger (2009) formulated five competences of an effective school leader. She met school leaders, consultants and academics to define these competences and stated this leader must be transformational because he needs to be innovative and effective. He has to make teachers learners again to keep on learning with and from each other (Krüger, 2009). Geijsel, Sleegers, Stoel and Krüger (2009) also found transformational leadership had a positive effect on the participation in professional learning activities of Dutch elementary school teachers.

A transactional leader has an exchange-relationship with his followers in order for their self-interest (Bass, 1999). This type of leadership has dominated as a leadership style since World War II (Hater & Bass, 1988). There can be some kind of reward system, which is clear to the followers. The followers know what they need to do to get this reward (Bass,

1999). Both kinds of leaders try to get to a certain goal (Hater & Bass, 1988); the difference is the path that leads them to this goal.

Burns (1979) first introduced the two concepts transactional and transformational leadership and has put them opposite from each other, where Bass thought those two concepts might have a positive effect on each other (Larson, 2008).

Bass suggested (1985) there are six leadership factors, all distributed under transformational and transactional leadership. Transformational leadership contains *charismatic leadership*, *individualized consideration* and *intellectual stimulation* (Byceo, Hackett & Allen, 1995). Later he added *inspirational motivation* (Judge & Piccolo, 2004). Geijsel, Sleegers, Stoel & Krüger (2009) found three core dimensions of a transformational school leader, based on the theory of Bass. These are: building a vision, providing individual support and to support intellectual stimulation. They believe an effective and innovative school leader should be transformational. This will increase commitment and participation in professional learning activities (Geijsel, Sleegers, Stoel & Krüger, 2009).

Transactional leadership consists of *contingent reward* and *Management-by-exception*. The last factor is *laissez-fair*, a passive form of leadership where a leader avoids to make decisions and to take action (Avolio, Bass & Jung, 1999). Contingent reward happens when a leader makes clear what a follower needs to do to earn a certain reward. Management by exception is the way a leader takes action cause of the relationship between the follower and leader (Judge & Piccolo, 2004). The leader knows when he has to take action when something goes wrong.

In this survey Dutch high schools leaders will be examined, whether they are more transactional or transformational. The definitions of Bass will be used. The questionnaire used is also based on these definitions.

### **Individual creativity**

As said before creativity is seen as an outcome (Amabile, Conti, Coon, Lazenby & Herron, 1996). It focuses on production of new ideas or products and has an important role in society (McLean, 2005). This includes finding creative solutions to (business) problems and strategies (Zhou & Shalley, 2003). Amabile (1996) found three important components of creativity: creativity skills, expertise and task motivation. You need expertise in a particular job to act creative. The creative thinking skills are used to actually being creative and depend on personal characteristics, risk taking and to not be afraid to do something different (Amabile, 1996). The task motivation will make sure a person will actually do it.

Creativity is closely related to innovation, but it is not the same. Innovation is about the process of implementing a new idea (McLean, 2005). This new idea is made possible due to the creativity of a person, so you cannot have innovation without creativity. Creativity is individual but is influenced by social and contextual factors, "*it doesn't occur in a vacuum*" (Shalley & Gilson, 2004, p. 35). The work environment of the organization has a big impact on individual creativity. This environment consists of resources, management practices and organizational motivation (Amabile, 1996). This study will only look at the influence management practices on individual creativity.

### **Leadership and creativity**

In every job there should be some sort of creativity (Shalley & Gilson, 2004). Leadership should play an important role in being creative in a particular context. He should be active in stimulating and motivating employees to be creative (2004), in order to survive as a business. This motivating and stimulating aspect corresponds to the concept of transformational leadership. This should mean when an employee has the perception of being managed in a transformational way, their creativity will be high. Supervision that is supportive should enhance creativity (Oldham & Cummings, 1996). The supervisor should

motivate employees to look at problems from different angles, which will have a positive effect on creativity (De Jong & den Hartog, 2007). Researchers that did not find this effect of transformational leadership on creativity are Jaussi and Dionne (2003). They found no evidence for their hypothesis about the moderating role of transformational leadership on creativity.

At the opposite, when an employee has the perception of being supervised in a transactional way, their creativity will be lower due to the fact that employees feel more controlled and will be more limited in their creativity (Oldham & Cummings, 1996).

### **Job autonomy and creativity**

When people get a degree of freedom in their job their job autonomy will be high and creativity can be enhanced (Amabile, 1996). Autonomy includes when employees have control about how to carry out their job (Rhoades & Eisenberger, 2002). Job autonomy includes intrinsic motivation, feeling competent and knowing you can make your own choices (Spreitzer, 1995). When employees feel freedom to use own ideas, job autonomy will grow and this will have a positive effect on creativity (Amabile, Conti, Coon, Lazenby, Herron, 1996). Individuals will be more creative when they have a choice in completing a task (Amabile, Conti, Coon, Lazenby & Herron, 1996). Goals can stay the same; only employees can choose their own path how to get there (Amabile, 1998). Amabile (1998) even suggests giving employees strategic goals, to improve creativity. Supervisors should match employees with work tasks, based on skills and interests, to get the best challenge in work (Amabile, 1996) and to feel autonomous. The subjects Spreitzer (1995) and Rhoades & Eisenberger (2002) suggest are part of job autonomy and will be used in this survey.



### **Cognition team diversity and creativity**

When a social context is diverse it is good for enhancing creativity. Diversity includes all differences between people (De Vries & Homan, 2008). Diversity should develop different ideas and perspectives and hereby enhance creativity (Shalley & Gilson, 2004). One important difference in a group is cognitive team diversity (Shin, Kim, Lee & Bian, 2012). Often when an individual enters a new group he has different ideas and thoughts about issues the group that already exists. Through interaction people get to know these differences and there might be a conflict or discussion about different ideas (Mohammed & Ringseis, 2001). The more diverse a group is, the more it will have conflicts. These conflicts are not bad. It means people share their ideas and seek for different answers. This should result in more alternatives and solutions to problems. These alternatives will be more original, complex and divergent than a cognitive homogeneous group. Kurtzberg (2005) found cognitive diversity is an important predictor for these outcomes and creativity is found valuable. In this survey cognitive team diversity is about diversity in thinking and opinions, whether people agree or disagree about certain subjects.

Combining these concepts above, more research is needed about the different relationships between these concepts in a high school environment. In this study the following question will be inquired:

**Central question:** does the perception of being led in a transformational or transactional way influence individual creativity of high school teachers and are job autonomy and cognitive team diversity moderating in this process?

With this question sub questions are developed:

- 1a. Does the perception of being led in a transformational way influence individual creativity?
- 1b. Does the perception of being led in a transactional way influence individual creativity?
2. Is job autonomy a moderator in foregoing effect?
3. Is cognition team diversity moderating in foregoing effect?

Based on the theoretical background, hypotheses are made concerning effects or relationships between the dependent variables, independent variables and moderators. These are:

H1a: The perception of being supervised through a transactional way has a negative effect on creativity.

H1b: The perception of being supervised through a transformational way has a positive effect on creativity.

H2: Job autonomy will have a positive effect on creativity, which will make the relationship between the leadership style and creativity more positive, no matter if this style is transactional or transformational.

H3: Cognition team diversity will have a positive effect on creativity, which will make the relationship between the leadership style and creativity more positive, no matter if this style is transactional or transformational.

These effects are included in the framework. The effects are shown in Figure 1.

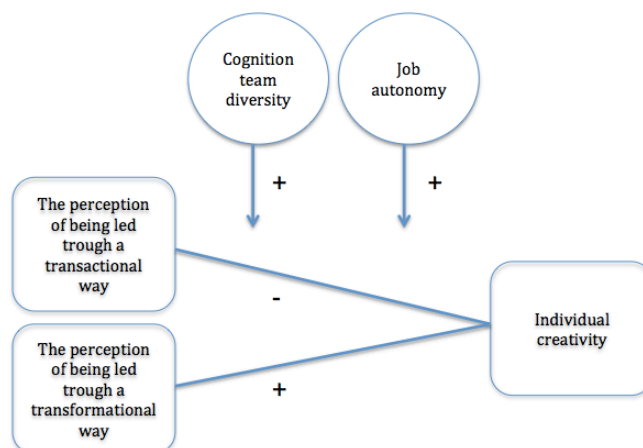


Figure 1. A framework for the relationship between the perceptions of employees about being led through a transactional or transformational way and individual creativity with accompanying negative or positive effects.

## Method

### Design

This survey was quantitative. To get the most data questionnaires were used. This way data could be conducted in a systematic way and is as objective as possible. Data was analyzed using the analyzing program SPSS (Statistical Package for the Social Sciences). The dependent variable is individual creativity and the independent variable is the leadership style. Job autonomy and cognitive team diversity are (possible) moderators.

### Participants

The participants in this survey are high school teachers from the Netherlands ( $n = 121$ ), 57 % is female and 43 % male. These teachers work in 26 different high schools within the four biggest cities of Holland and their surroundings, a very populated part of The Netherlands. The school with the biggest amount of respondents had 18 participants. The school with the lowest amount of respondents had one participant. The biggest part of the

participants has done a form of higher education (43,8%), 15,7% has a bachelor from a university, and 25,6% has a master degree or higher.

The average years people are working at the school where they are working now is 9,5 years.

## **Instruments**

The questionnaire is divided in five parts. The first part measures the perception of employees about being led in a transformational or transactional way. An instrument that is used a lot is the Multifactor leadership questionnaire (MLQ) of Bass and Avolio (1999). This questionnaire has changed some times because it also got some critiques. Yukl (1999) says there are some discrepancies in this questionnaire, because transactional leadership is seen as wrong and transformational leadership as the good. It is proven transformational leadership is effective, but also transactional leadership can be (1999). This is why Den Hartog, Van Muijen and Koopman (1997) tested the MLQ, adapted it and gave it the name: MLQ-8Y, with a total of 27 items. Only the items about transformational (17 items) and transactional leadership (9 items) are used in this study. It has a 5 point Likert scale where 1 stands for 'not at all the case' and 5 for 'totally the case'. A sample question is: 'My team leader has a clear vision' (*Mijn teamleider draagt een duidelijke visie op*). This questionnaire was already in Dutch and did not need translation.

The second part measured the individual creativity of the employees. This part of the questionnaire was based on the creativity questionnaire of Zhou and George (2001). It contains 13 items. It has a 5 point Likert scale where 1 stands for "not at all characteristic" and 5 for "very characteristic". A sample question is: 'I am afraid to take risks' (*Ik ben bang risico's te nemen*). This questionnaire was translated into Dutch and was revised by pre-test participants.

The third part consisted of three items about job autonomy and was designed by Spreitzer (1995). The three questions were translated into Dutch. Also here a 5-point Likert

scale is used. A sample question is: 'I can determine independently how to execute my work' (*Ik bepaal zelfstandig hoe ik mijn werk moet uitvoeren*).

The fourth part is about cognitive team diversity. Cognitive team diversity was measured using the four items of Miller, Burke and Glick (1998). These four items were measured using a 5 point Likert scale, where 1 stands for 'strongly disagree' and 5 for 'strongly agree'. A sample question is: 'How strongly do the members of your team agree or disagree about what priorities of the school should be' (*Hoe sterk zijn leden van uw team het eens of oneens met elkaar over wat de prioriteiten van de school zouden moeten zijn*).

The last part measured demographic variables: gender, age, educational level, work experience and ethnicity.

The reliability of the whole questionnaire was  $\alpha = .941$ . The reliability of the different parts was also measured separately. The first part about leadership had a reliability of  $\alpha = .949$ , the second part about creativity had a reliability of  $\alpha = .856$ , the third part about job autonomy had a reliability of  $\alpha = .873$ , and the last part about cognitive group diversity had a reliability of  $\alpha = .647$ .

Some high school teachers tested the instrument to see whether everything was clear and correct. This pre-testing supports the validity of this survey. The questionnaire can be found in Appendix A.

## **Procedure**

High school teachers in The Netherlands filled out the questionnaire. These teachers were contacted by e-mail from their manager or from the researcher. They could participate if they wanted to so nothing was obliged. Eventually teachers from 26 high schools filled in the questionnaire. Forty schools were contacted to participate.

The questionnaire was online, so could be answered using Internet at a moment of their own choice. The questionnaire took about five minutes and was directly send to the researcher

using a 'send' button. No names had to be filled in, so the teachers had complete anonymity. After this all data were collected for further analyses.

### **Analyses**

To search for an answer on the research question the correlation between leadership style and creativity was measured using *correlation* in SPSS. The questions about transactional and transformational were separately used. Of both leadership styles the means were measured for every participant. These were used to measure a possible correlation with creativity. To see whether moderators (cognitive team diversity and job autonomy) had an effect the '*moderating effect*' is tested, also using SPSS. These moderators acted as a third variable.

### **Results**

To see which leadership style, transactional or transformational was the most common in Dutch high schools means were compared. The mean of transformational leadership is 3,346 (SD = .767), with a minimum of 1.50 and a maximum of 4.94 (measurements were measured on a scale from 1 to 5). Transactional leadership had a mean of 2.95 (SD = .763), with a minimum of 1.33 and a maximum of 4.44. To see whether this difference is significant, a paired *t*-test is used. Transformational leadership is significantly more noticed than transactional leadership in high schools,  $t(120) = 7,36, p < .05$ .

### **Correlations**

To answer the central question correlations between leadership style and creativity were calculated, first the correlation was measured of the two leadership styles combined. To use Pearson's correlation coefficient data has to be normally distributed. As seen in Figure 4 (see Appendix B) this was the case.

A correlation has been found between leadership and creativity,  $r = .310, p < .01$ . As seen in Figure 2 the correlation is positive, but the correlation is low.

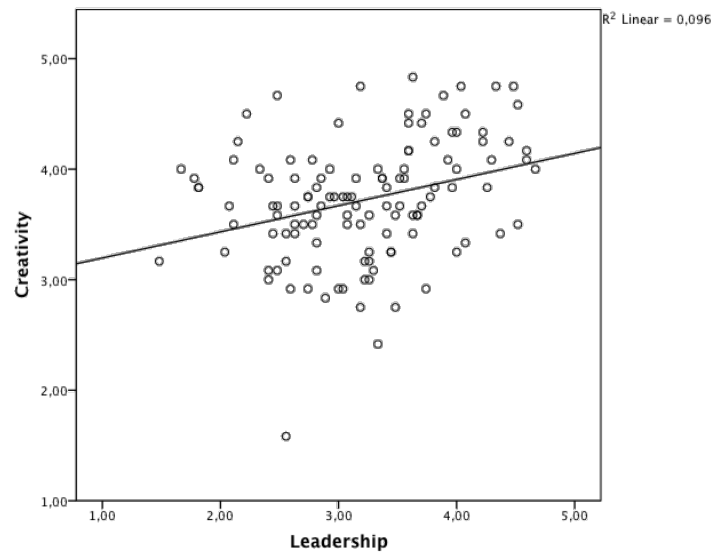
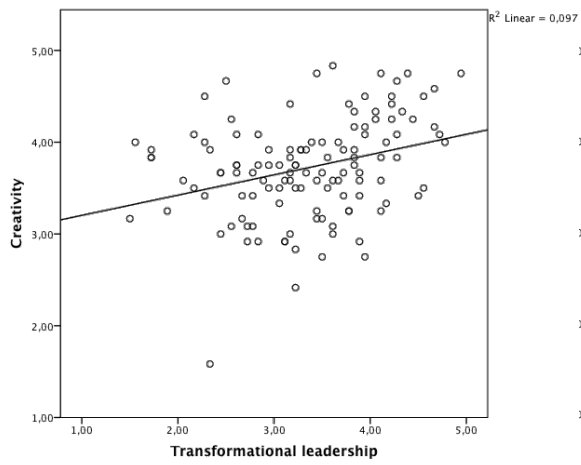


Figure 2. A scatterplot of the correlation between leadership in general and individual creativity.

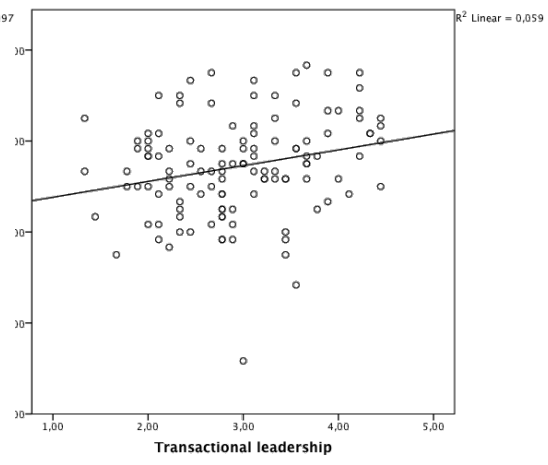
Next to this correlation the two leadership styles were separated, to see if there was a correlation with the separate leadership style and creativity.

A correlation was found within transformational leadership and creativity, but also this correlation was low.  $r = .311, p < .01$  (see Figure 3a). There also was a correlation between transactional leadership and creativity, but this correlation is hardly there because the correlation is lower than  $r = .30, r = .243, p < .01$  (see Figure 3b). These correlations and descriptive statistics are also found in Table 1. The exact correlations can be found in Appendix C.

What else can be found in this table are some other correlations. An interesting and strong correlation was found between age and transformational leadership,  $r = .941 (p < .01)$ . Next to this correlation, two other correlations were found; between work experience and creativity  $r = .99 (p < .01)$  and between education and age  $r = .726 (p = .035)$ .



*Figure 3a.* Scatterplot of the correlation between transformational leadership and individual creativity.



*Figure 3b.* Scatterplot of the correlation between transactional leadership and individual creativity.



Table 1.  
*Descriptive statistics and correlations of main variables.*

| Variables                      | N   | Minimum | Maximum | Mean  | s.d.  | 1      | 2      | 3      | 4     | 5     | 6     | 7     | 8 |
|--------------------------------|-----|---------|---------|-------|-------|--------|--------|--------|-------|-------|-------|-------|---|
| 1. Leadership combined         | 121 | 1.48    | 4.67    | 3.21  | 0.71  |        |        |        |       |       |       |       |   |
| 2. Transformational leadership | 121 | 1.50    | 4.96    | 3.34  | 0.77  | .967** |        |        |       |       |       |       |   |
| 3. Transactional leadership    | 121 | 1.33    | 4.44    | 2.95  | 0.76  | .858** | .699** |        |       |       |       |       |   |
| 4. Creativity                  | 121 | 1.58    | 4.83    | 3.72  | 0.54  | .310** | .311** | .243** |       |       |       |       |   |
| 5. Age                         | 121 | 1.0     | 64.0    | 40.58 | 12.55 | -.030  | .007   | -.097* | .142  |       |       |       |   |
| 6. Gender                      | 121 | 1       | 2       | 1.57  | 0.50  | -.003  | -.039  | .071   | .158  | -.055 |       |       |   |
| 7. Education                   | 121 | 1       | 5       | 3.73  | 0.95  | -.131  | -.140  | -.085  | -.029 | .035  | .076  |       |   |
| 8. Work experience             | 121 | 0       | 40      | 9.53  | 8.95  | -.114  | -.099  | -.121  | .000  | .490* | -.083 | -.041 |   |

\*= p < 0.05  
 \*\* p < 0.01

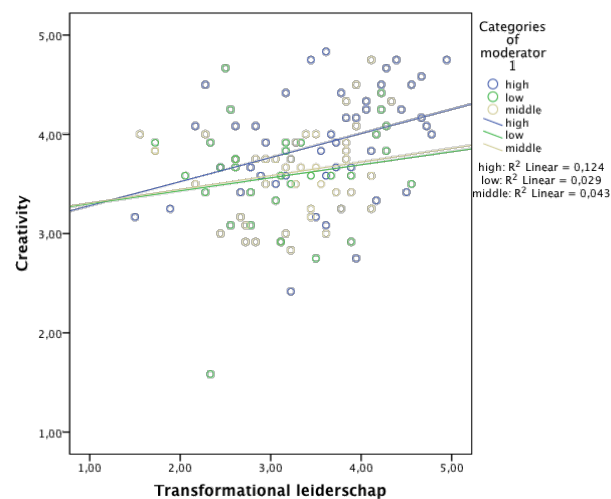
## Moderators

To see whether there was a moderating effect of job autonomy and/or cognitive group diversity, the moderating effect was measured. The moderating effect was measured for the correlation between creativity and the two leadership styles (separately and in total).

The first moderator is job autonomy. This had a significant moderating effect on the correlation between transformational leadership and creativity ( $p = .035$ ) (see Appendix D).

This effect is also shown in Figure 4. The lines are crossing which indicates there was an interaction.

Job autonomy did not have a significant moderating effect on the correlation between transactional leadership and creativity ( $p = .062$ ).



*Figure 4.* Interaction effect of the moderator 'job autonomy' on the correlation between transactional/transformational leadership and creativity.

To see if there was a moderating effect of the second moderator, cognitive team diversity, the moderation effect was determined. This moderator did not have a significant moderation effect on the correlation between transformational leadership and creativity ( $p = .344$ ). This states the moderator does not have an effect on the correlation. This moderator

also did not have a moderating effect on the correlation between transactional leadership and creativity ( $p = .910$ ).

### **Conclusions**

The goal of this survey was to see whether there is an influence of leadership on the individual creativity of high school teachers in the Netherlands. Much research has been done about the differences between transactional and transformational leadership. Also the role of creativity was found. But the question arose if these outcomes also could be found in Dutch high schools, because a lot of the surveys took place in companies in the economic sector. And to look at the moderating role of 'job autonomy' and 'cognitive group diversity' on this particular correlation in this context was new.

Means were compared to see which leadership style, transactional or transformational leadership is the most common in high schools. Looking at the means, transformational leadership is significantly more common in Dutch high schools than transactional leadership. To find out if there is a relationship between the leadership style and the influence on individual creativity, correlations were measured. Previous research has said there should be a positive effect of transformational leadership in creativity. Because a transformational leader is supportive which should increase individual creativity (Oldham & Cummings, 1996). On the other hand Oldham and Cummings (1996) found there was a negative influence of transactional way on individual creativity, because there is more limitation and control on what people do. In this survey the first subject looked at was leadership in general (transformational and transactional leadership combined) and if this had a significant positive effect on creativity. This was the case ( $p < .01$ ). To see what influence the leadership styles had separately on individual creativity also these correlations were measured. Both transactional as transformational leadership had a significant positive effect on individual creativity (both  $p < .01$ ). The strength of this correlation differs. Transformational leadership has a slightly stronger correlation ( $r = .311$ ) with individual creativity than transactional

leadership ( $r = .243$ ) (see Figure 3a and 3b). Both correlations were not strong; they had a small effect on individual creativity. This means hypothesis 1a was rejected and 1b could be assumed.

To see whether there was an influence on this effect caused by moderators, the moderating effect was calculated of both 'job autonomy' and 'cognitive team diversity'.

A significant influence was found of job autonomy on the correlation between transformational leadership and individual creativity ( $p = .035$ ). This effect was not found on the correlation with transactional leadership. This means a part of hypothesis 2 was correct and the other part is not. Because this moderator did have a positive effect on the correlation between transformational leadership and creativity, but not have a significant effect on the correlation between transactional leadership and creativity. Cognitive team diversity did not play a significant role in the correlation between both of the leadership styles and individual creativity. This means hypothesis 3 was rejected.

A strength of this research is that the reliability of the questionnaire is high ( $\alpha = .941$ ). So although some parts had to be translated from English to Dutch, this did not have a big influence on the reliability of the questionnaire.

## **Discussion**

### **Limitations**

This research has some interesting outcomes, but also has its limitations. In this research teachers of 26 schools in the four biggest cities and their surroundings in The Netherlands were asked to fill in the questionnaire. The goal was to use the least schools possible for this survey, to make sure contexts were the same for any school (kind of school, number of pupils, city school or not etc.). When the context is the same, the exact influence of the subject will be clearer. The best was to find a big school (with more than 100 teachers) that wanted to participate as a whole. This was unfortunately not the case. All schools were located in an area around the four biggest cities of The Netherlands but this is still a big area with a lot of

high schools. To use 26 schools the risk is contexts of the schools differ too much which can lead to skewed outcomes. Every school has a different approach in leading and supporting teachers. The outcomes can be more reliable when more teachers of one school participated in this (or further) research. The school with the most participating teachers had 18 participants. When more teachers from the same school can participate, this will increase the reliability. With the use of 26 schools this research could be easily generalized.

Looking at the outcomes of this survey, both the correlation of transactional and transformational leadership with individual creativity is statistically and positively significant. But to actually look at these correlations, the correlation were low. This showed there was a correlation but it is not really big. Further research is needed to see whether this correlation is actually meaningful. Next to these correlations two other interesting correlations were found, between work experience and creativity ( $r = .999, p < .01$ ) and between transformational leadership and age ( $r = .941, p < .01$ ). In this survey these correlations were not included in the central question, but could be interesting to inquire in other research.

In this survey the perception of teachers about leadership was used to get data about the different kinds of leadership. This intends the data is not totally objective. What could enrich this survey is to also get data from other recourses, like managers and/or team leaders. Because in this survey 26 schools were used, it would take too much time to get in contact with these managers. For further research this will make data stronger and less subjective.

The reliability of the questionnaire in total was high ( $\alpha = .941$ ), but to look at the individual parts, one stands out. All the various parts have a reliability around  $\alpha = .80$ , but the questions about the moderator 'cognitive team diversity' had a reliability of  $\alpha = .647$ . To measure cognitive team diversity more data is needed, to have better insight in this topic.

This moderator also did not have any significant effect on the correlation between both of the leadership styles and individual creativity. The question is whether high school teachers are that diverse from each other as thought. Mohammed & Ringseis (2001) suggested the more divers a group is, the more conflicts they will have. And the more a group

has conflicts, the more people are sharing their different ideas. This mostly leads to better alternatives or solutions for a problem. In this survey no research was done about how many conflicts teachers have with one another. It could be interesting to see whether this could make a difference as a moderator in this kind of survey.

Looking at the other moderator, the question arises why there was only an effect found of the moderator 'job autonomy' on transformational leadership, and not on transactional leadership. It could be the case when people feel a kind of freedom in their work they feel more freedom to be creative and to have their own ideas (Amabile, 1996). A transformational leader (and not a transactional one) mostly provides this freedom. Another part of job autonomy is when people know they can make their own choices or decisions (Spreitzer, 1995). Most transactional leaders do not provide any space for these choices and will make these choices for you. More research can be done about this influence of leadership on job autonomy, especially in education.

What also can be useful for further research is to look at the more specific components of transactional and transformational leadership. As said before Bass (1999) found seven components: charisma, inspirational, intellectual stimulation, individualized consideration, contingent reward, management-by-exception and laissez-faire leadership. Interesting to see is which components are the most influential on individual creativity. This can be done using the Multifactor Leadership Questionnaire (MLQ). In this survey the MLQ-8Y was used because this divides leadership in only two styles, transactional and transformational leadership and needed no translation. The MLQ looks at all of these seven aspects of leadership (Avolio, Bass & Jung, 1999). The outcome of this questionnaire next to measuring individual creativity can be used to give a more detailed view on the effects on creativity and which aspect or aspects are the most influential.

Next to these different components of the two leadership styles more research can be done about the work environment of the teachers, and what impact this has on individual creativity. In this survey the only component inquired was the influence of the team leader.

But like Amabile (1996) suggests there are more components that can influence creativity, like the available resources and organizational motivation.

In conclusion more research can be done about the different aspects of leadership (Bass, 1999) in high schools and the actual influence of cognitive team diversity as a moderator. The best would be when this research is done in one particular context using multiple layers of the school (teachers, managers, pupils).

### **Practical implications**

A lot can be done with the outcomes of this survey. A significant effect of leadership on creativity was found. So leaders of high schools should be aware of this influence, and should use it in a positive way. When they lead teachers of their team in a good and supportive way, teachers can get to a higher level of individual creativity.

Next to this outcome, also found that there were more transformational leaders in high schools than transactional leaders. This is a good thing because the correlation between a transformational leader and creativity is stronger. This can indicate that the more transformational leaders there are in a high school, the more creative teachers could be. For the management this outcome is interesting. When they hire new teachers it can be important to look at this fact, and to use it in an interview. If they can already find out whether someone is transactional or transformational this could be another way of choosing for a particular candidate.

With this same correlation, between transformational leadership and creativity, job autonomy also plays a moderating role. So when teachers feel autonomous in their job, their creativity could be higher. When the management of a high school gives a teacher more control about how to carry out their job, not only their job autonomy will be enhanced, also their creativity can be higher (Rhoades & Eisenberger, 2002; Amabile, 1996). When teachers will have the ability to develop themselves in a professional way, job autonomy should be

improved. When schools have different programs to support this development, this can eventually have a positive outcome on the creativity of the teachers.

These outcomes all should be positive for the pupils. The main goal of a teacher is to teach the best they can so pupils can learn and develop as much as they can. Creative teachers are needed to inspire their pupils. When teachers are creative in their job, this will have an immediate effect on their pupils. When teachers use their creativity and adopt their lessons every time to the subject and the differences between pupils, pupils will also become more flexible and will have a more active role when they have to participate (Horng, Hong, ChanLin, Chang & Chu, 2005). So as well for the teachers as for the pupils the outcomes will be better when a teacher is more creative and is led in a more transformational way. And not to forget, even when a teacher is led in a transactional way, this has a significant positive effect on creativity.

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**Appendix A**  
**Questionnaire**

# Vragenlijst docenten

Beste docent,

Alvast hartelijk dank dat u deze vragenlijst wilt invullen.

Ik ben een Masterstudente Onderwijskunde aan de Universiteit van Utrecht. U zou mij erg helpen met het afronden van mijn studie door deze vragenlijst in te vullen. Alle gegevens die u invult zullen strikt anoniem worden verwerkt. Alleen ik zal de vragenlijsten te zien krijgen. Deze zullen dus nooit door leidinggevendenden of mede-docenten bekeken kunnen worden. Alleen uw ingevulde antwoorden zullen gebruikt worden, verwerkt in gemiddeldes, uw naam zal dus nergens terug komen in het verslag.

De vragenlijst bestaat uit vijf onderdelen en zal ongeveer vijf minuten in beslag nemen.

Wilt u de vragenlijst zo waarheidsgetrouw mogelijk kunnen invullen? Dit zal het meest waardevol zijn voor het onderzoek. Er bestaan namelijk geen slechte of goede antwoorden.

Mocht u nog vragen hebben, kunt u mij altijd contacteren via onderstaand e-mailadres.

Met vriendelijke groet,

Merel Pompe

Masterstudente Onderwijskunde  
Universiteit van Utrecht

[m.pompe@students.uu.nl](mailto:m.pompe@students.uu.nl)

\* Required

## Onderdeel 1

---

Dit onderdeel bevat vragen over uw teamleider.

Geef aan in welke mate de uitspraken van toepassing zijn op uw teamleider. U kunt kiezen uit vijf schalen, waarbij 1 = helemaal niet het geval en 5 = helemaal het geval.

### 1. Mijn teamleider . . . \*

*Mark only one oval per row.*

|   | 1 helemaal niet het geval | 2                     | 3                     | 4                     | 5 helemaal het geval  |
|---|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| . . spreekt optimistisch over de toekomst van de school.  | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| . . behandelt mij als individu, in plaats van als een willekeurig lid van het team.                             | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| . . overlegt met mij hoe ik kan groeien in mijn carrière binnen de school als ik doe wat er gedaan moet worden. | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| . . is waakzaam ten aanzien van het niet behalen van de normen (normen van school, kerndoelen etc.).            | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| . . draagt een duidelijke visie op mogelijkheden in de toekomst uit.  | <input type="radio"/>     | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

|  |                       |   |                       |
|--|-----------------------|---|-----------------------|
| . . luistert naar zaken die voor mij van belang zijn.  | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . stelt speciale beloningen voor goed werk in het vooruitzicht (op langere termijn, zoals bijv. een promotie).               | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . vestigt de aandacht op onregelmatigheden, vergissingen, uitzonderingen en/of afwijkingen van wat van mij verwacht wordt.   | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . geeft advies wanneer dat nodig is.   | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . fungeert voor mij als een voorbeeld.   | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . stimuleert me mijn mening met goede argumenten te onderbouwen.   | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . introduceert nieuwe projecten en uitdagingen.  | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . let op fouten in prestaties die correctie behoeven.  | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . laat me zien hoe je problemen vanuit nieuwe gezichtshoeken kunt bekijken.  | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . vertelt mij wat ik moet doen om voor mijn inspanningen beloond te worden (op langere termijn, zoals bijv. een promotie).   | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| creëert een teamgevoel bij het werken aan een belangrijke opdracht/project.  | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . maakt duidelijk wat het me zal brengen (op langere termijn, zoals bijv. een promotie) als ik doe wat van me vereist wordt. | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . houdt fouten goed in de gaten.   | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . maakt dat ik trots ben met hem/haar samen te werken.   | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . toont een buitengewone bekwaamheid bij alles wat hij ondemeemt.  | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . toont in woord en daad een imago van bekwaamheid.  | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . maakt mij bewust van belangrijke gemeenschappelijke waarden, idealen en aspiraties.  | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . toont zich sterk overtuigd van eigen opvattingen en waarden.   | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . heeft een sterke, dynamische persoonlijkheid en een krachtige uitstraling.   | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . kan elke hindernis nemen.  | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . heeft in mij het volle vertrouwen.   | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |
| . . is voor mij een symbool van succes en bekwaamheid.   | <input type="radio"/> | <input type="radio"/> <input type="radio"/> <input type="radio"/> | <input type="radio"/> |

## Onderdeel 2

---

Dit onderdeel gaat over uw eigen werkzaamheden binnen de school.  
Geef aan in hoeverre de volgende uitspraken op uzelf van toepassing zijn,  
waarbij 1 = helemaal niet van toepassing en 5 = helemaal van toepassing.

2. \*

*Mark only one oval per row.*

|  | 1 Helemaal niet van toepassing | 2                     | 3                     | 4                     | 5 Helemaal van toepassing |
|--|--------------------------------|-----------------------|-----------------------|-----------------------|---------------------------|
| Ik kom met nieuwe manieren om doelen/doelstellingen te behalen.                      | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik kom met nieuwe en praktische ideeën om prestaties te verbeteren.                  | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik kom met ideeën om de kwaliteit van het onderwijs te verbeteren.                   | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik ben een goede bron van creatieve ideeën.  | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik ben bang risico's te nemen.   | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik promoot mijn eigen ideeën richting anderen.                                       | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik vertoon creativiteit in mijn werk wanneer daar de mogelijkheid toe gegeven wordt. | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik ontwikkel adequate plannen voor de uitvoering van ideeën.                         | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik heb nieuwe en innovatieve ideeën.   | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik kom met creatieve oplossingen voor problemen.                                     | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik heb een frisse aanpak voor het oplossen van problemen.                            | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik kom vaak met nieuwe manieren voor het uitvoeren van mijn werktaken.               | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |

## Onderdeel 3

---

De volgende uitspraken gaan over autonomie in uw werk.  
Geef aan in welke mate dit op u van toepassing is,  
waarbij 1 = helemaal niet van toepassing en 5 = helemaal van toepassing.



3. \*

Mark only one oval per row.

|   | 1 Helemaal niet van toepassing | 2                     | 3                     | 4                     | 5 Helemaal van toepassing |
|---|--------------------------------|-----------------------|-----------------------|-----------------------|---------------------------|
| Ik bepaal zelfstandig hoe ik mijn werk moet uitvoeren.  | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik kan zelf beslissen over hoe om te gaan met het uitvoeren van mijn werk.                      | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |
| Ik krijg een grote mate van onafhankelijkheid en vrijheid in de manier waarop ik mijn werk doe. | <input type="radio"/>          | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>     |

## Onderdeel 4

---

Dit onderdeel gaat over de diversiteit binnen uw team.

Hoe sterk zijn leden van uw team het eens of oneens met elkaar over ...  
(Hierbij is 1 = sterk oneens en 5 = sterk met elkaar eens).

4. \*

Mark only one oval per row.

|  | 1 Sterk oneens        | 2                     | 3                     | 4                     | 5 Sterk met elkaar eens |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------|
| . . de beste manier om de effectiviteit van de school te maximaliseren op langere termijn. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| . . wat de prioriteiten van de school zouden moeten zijn.                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| . . de beste manier om als school op lange termijn te kunnen overleven.                    | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |
| . . welke doelstellingen voor de school het meest belangrijk zouden moeten zijn.           | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>   |

## Onderdeel 5

---

Dit laatste onderdeel vraagt om uw algemene gegevens.  
Deze worden gebruikt voor statistische doeleinden.

5. **Wat is uw geslacht? \***

Mark only one oval.

- man  
 vrouw

6. **Wat is uw leeftijd in jaren? \***

.....

**7. Wat is uw hoogst afgeronde opleiding? \***

*Check all that apply.*

- HAVO
- VWO
- HBO
- WO
- WO master
- Other: .....

**8. Wat is uw nationaliteit? \***

*Check all that apply.*

- Nederlands
- Other: .....

**9. Op welke school bent u werkzaam? \***

.....

**10. Hoe lang bent u al werkzaam op deze school? \***

(in jaren)

.....

**11. Binnen welk team bent u werkzaam? \***

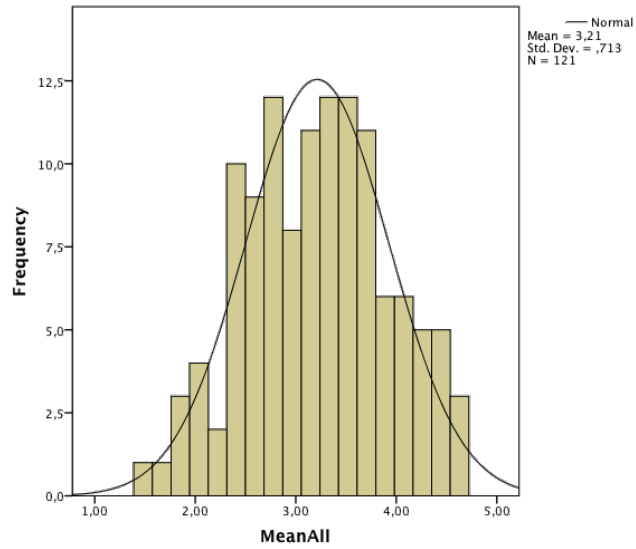
.....

**12. Wie is uw teamleider? \***

(herinnering: data worden strikt anoniem verwerkt)

.....

## Appendix B



*Figure 5.* Histogram made out of the data of leadership, which shows the data is normally distributed.

### Appendix C

Table 2

*Correlation between leadership and creativity.*

|                 |                     | Mean creativity | Mean leadership |
|-----------------|---------------------|-----------------|-----------------|
|                 | Pearson correlation | 1               | .310**          |
| Mean creativity | Sig. (2-tailed)     |                 | .001            |
|                 | N                   | 121             | 121             |
| Mean leadership | Pearson correlation | .310**          | 1               |
|                 | Sig. (2-tailed)     | .001            |                 |
|                 | N                   | 121             | 121             |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 3

*Correlation between transformational leadership and creativity.*

|                                  |                     | Mean leadership | Mean creativity |
|----------------------------------|---------------------|-----------------|-----------------|
|                                  | Pearson correlation | 1               | .311**          |
| Mean transformational leadership | Sig. (2-tailed)     |                 | .001            |
|                                  | N                   | 121             | 121             |
| Mean creativity                  | Pearson correlation | .311**          | 1               |
|                                  | Sig. (2-tailed)     | .001            |                 |
|                                  | N                   | 121             | 121             |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 4

*Correlation between transactional leadership and creativity.*

|                               |                     | Mean creativity | Mean leadership |
|-------------------------------|---------------------|-----------------|-----------------|
|                               | Pearson correlation | 1               | .243**          |
| Mean creativity               | Sig. (2-tailed)     |                 | .007            |
|                               | N                   | 121             | 121             |
| Mean transactional leadership | Pearson correlation | .243**          | 1               |
|                               | Sig. (2-tailed)     | .007            |                 |
|                               | N                   | 121             | 121             |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## Appendix D

Table 5

*Moderating effect of 'job autonomy' on the correlation between transformational leadership and creativity.*

|                                   | Coeff. | se     | <i>t</i> | <i>p</i> |
|-----------------------------------|--------|--------|----------|----------|
| Constant                          | 3,695  | 0,047  | 78,045   | .000     |
| Moderator                         | 0.145  | 0.071  | 2.045    | .043     |
| Mean 1                            | 0.182  | 0.0643 | 2.832    | 0.005    |
| int_1                             | 0.157  | 0.074  | 2.129    | 0.035    |
| int_1    mean 1    x    moderator |        |        |          |          |

Table 6

*Moderating effect of 'job autonomy' on the correlation between transactional leadership and creativity.*

|                                   | Coeff. | se     | <i>t</i> | <i>p</i> |
|-----------------------------------|--------|--------|----------|----------|
| Constant                          | 3,717  | 0,0479 | 77,520   | .000     |
| Moderator                         | 0.148  | 0.071  | 2.080    | 0.040    |
| Mean 2                            | 0.152  | 0.0574 | 2.642    | 0.009    |
| int_1                             | 0.159  | 0.0845 | 1.882    | 0.0623   |
| int_1    mean 2    x    moderator |        |        |          |          |

Table 7

*Moderating effect of 'cognitive group diversity' on the correlation between transformational leadership and creativity.*

|                                     | Coeff.  | se     | <i>t</i> | <i>p</i> |
|-------------------------------------|---------|--------|----------|----------|
| Constant                            | 3,702   | 0.0570 | 64.915   | .000     |
| Moderator 2                         | -0.0029 | 0.0843 | -0.0344  | .973     |
| Mean 1                              | 0.208   | 0.0749 | 2.783    | 0.006    |
| int_1                               | -0.113  | 0.119  | -0.949   | .345     |
| int_1    mean 1    x    moderator 2 |         |        |          |          |

Table 8

*Moderating effect of 'cognitive group diversity' on the correlation between transactional leadership and creativity.*

|                                     | Coeff.  | se     | <i>t</i> | <i>p</i> |
|-------------------------------------|---------|--------|----------|----------|
| Constant                            | 3,718   | 0.055  | 67.646   | .000     |
| Moderator 2                         | -0.0074 | 0.0929 | -0.0797  | 0.937    |
| Mean 2                              | 0.171   | 0.0681 | 2.510    | 0.0134   |
| int_1                               | -0.0117 | 0.1037 | -0.1130  | .910     |
| int_1    mean 2    x    moderator 2 |         |        |          |          |