Power and Creativity:

Creative vs. Non-Creative Environment

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Abstract

Recent research shows that possessing power has effects on creativity. Past experiments manipulate power through priming; in this experiment we used actual social situations to manipulate power. We proposed that high power individuals are more creative in a non-creative setting compared to low power individuals, due to their focus on internal cues. This was not the case, no significant differences in creativity scores were found. We also proposed high power individuals would be less creative in a creative setting compared to low power individuals. Our experiment did not find a difference in creativity scores for the creative setting. An independent measurement of creativity was used in contrast to earlier research on power and creativity. We elaborate on measuring power, creativity and the methods and findings of the study.

Power influences our behavior in various ways. Power is associated with approach related behavior (Keltner, Gruenfeld, & Anderson, 2003), risk taking behavior (Magee, Galinsky & Gruenfeld, 2007), abstract information processing (Smith & Trope, 2006), violation of politeness-related communication norms (Brown & Levison, 1987. In: Keltner et al., 2003) and a reduced tendency to take the perspective of other people (Galinsky, Magee, Inesi, & Gruenfeld, 2006). In this experiment we are interested in the effects power has on creativity. Power is defined as an interdependable relationship between people, where power is the ability to influence others. This kind of power is of often titled *social power* (Lammers, Stoker, & Stapel, 2009).

The psychological properties of social power can be activated by exposure to cues related to power or by recalling past experiences with power (Anderson & Galinsky, 2006). These methods are often used in experiments to manipulate power in individuals. However, according to our definition, power is a social phenomenon. Priming does not take into account the social aspects of power. Therefore our experiments will use a different form of power manipulation. We will use actual social situations to manipulate power in individuals.

Power and Creativity

Power is indirectly linked to creativity. Elevated power is associated with certain personality traits that correlate with creativity, such as extraversion (Anderson, John, Keltner, & Kring, 2001; King, Walker, & Boryles, 1996). Power manipulations also affect positive mood (Keltner et al., 2003), which is closely linked to creativity and creative problem solving (Kaufman, 2003).

Besides the implied indirect effects, power also has a direct effect on creativity. Power is associated with perceived dependence, freedom and control (Keltner et al., 2003). "*Although, power is defined as the capacity to influence others, it could also be said that power is the capacity to be uninfluenced by others*" (Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008). The powerful are more sensitive to their own subjective experience and feelings while generating thoughts and reactions (Brinol, Petty, Valle, Rucker, & Becerra, 2007. In: Galinsky et al., 2008). One could say

power frees people from the influence of external forces; they are therefore less influenced by their environment (Galinsky et al., 2008). This is supported by the fact that power also promotes reliance on the ease of retrieval and powerful people tend to construe their judgments on momentary subjective experiences instead of attitudes or prior knowledge (Weick & Guinote, 2008). Powerful people rather use their internal subjective experiences instead of being influenced by external forces.

Galinsky et al. (2008) showed that, as a consequence of being less influenced by external forces, priming people with high power facilitates creativity. In their *winged alien* experiment, participants were asked to create a new creature that was discovered on a planet very different from earth. Beneath these instructions was a drawing of a giant creature with wings. They showed that people primed with high power were less influenced by their environment in this creative generation task. High power individuals were less likely to create a new alien, which also had wings, compared to low power individuals. They also showed that people primed with high power were less likely to copy examples in a brand creation task. In line with the *winged alien* experiment, we expect high-power individuals to be less influenced by external cues and therefore show less copycat behaviour when compared to low-power individuals (Hypothesis 1).

Galinsky et al. (2008) assign increased creativity to the fact that high-power individuals are less influenced by their environment than low power individuals and therefore come up with new subjective and creative thoughts. But can creativity be defined as creating new ideas from scratch? Or could creativity also be defined as using existing elements, for instance from the environment, and using them in a new way? Isn't a clothing designer creative when he uses retro elements in a new designer coat? Weren't Orville and Wilbur Wright inspired by birds when they invented the first airplane? Or for the winged alien experiment, is a participant less creative when he comes up with an excellent alien for the new planet that also has wings? Taking into account these aspects of creativity; not using our surroundings in a creative generation task would not automatically translate to an increased level of creativity, since creative people can also use their surroundings to come up with new and creative thoughts.

With these questions in mind, defining creativity is hard. Creativity is that characteristic of human behavior that seems the most mysterious and yet most critical to human advancement. For our present study creativity is divided into a conceptual and an operational definition. Conceptually creativity is defined as: A product that is creative to the extent that it is both a novel and an appropriate, useful, correct or valuable response to an open-ended task. But with this definition the following question arises: what is the best way to measure creativity? This is where an operational definition of creativity comes into play: 'A product or response is considered creative to the extent that appropriate observers independently agree that it is creative' (Hennessey & Amabile, 1999). Instead of defining creativity by looking at copycat behavior, which is the case in the winged alien experiment of Galinsky et al. (2008), creativity is maybe best assessed by an independent creativity measure, which is judged by experts.

Assuming that power influences the focus on external cues, not only power itself is of importance, but the environment could play a role as well. Powerful people are less influenced by external forces, they don't use their environment while completing a creative task. But what if the environment contains objects that facilitate the creative process? High power individuals would not use all of this free information due to their internal focus. For low power individuals the opposite is true. They use their environment looking for clues that tell them they are doing the right thing. A creative environment would foster the creative process of low power individuals when compared to high-power individuals.

One could say that in a creative task, high power individuals would benefit from a blank environment, where the only source of creativity is the individual itself. On the other hand, low power individuals would benefit from a creative environment that contains information that can be used in the creative process. We propose that high power participants will be more creative in a non-creative environment when compared to low power participants (Hypothesis 2). We also propose that high power participants are less creative in a creative environment when compared to low power participants (Hypothesis 3).

Method

Subjects. Participants consisted of 44 women (mean age 21.8 years). [1] All were students at the University of Utrecht and signed up for an experiment that was entitled 'Task coordination in groups: A brainstorm experiment'. Subjects were always tested in pairs and received a €4 compensation for their participation.

Procedure. The experiment had a 2 (high- vs. low-power) x 2 (creative vs. non-creative environment) between-subjects design. Subjects were seated in a room and told they would enter an experiment on the effects of group thinking on brainstorm activities. They were told the study contained 4 different stages; the first stage would test their leadership capabilities (our power manipulation), the second stage was a brainstorm experiment, followed by a relaxation task (our creativity assessment) and the fourth stage was a second brainstorm experiment.

Power Manipulation. Subjects were separated and seated in different rooms. They were asked to fill in a 'Skills inventory questionnaire', which assesses leadership capabilities (appendix A; Northouse, 2007). While subjects filled in the questionnaire the experimenter waited outside, subjects could tell when they were done by knocking on the door. After receiving the questionnaire, subjects were told another experimenter would rate the questionnaires. Scoring did not actually take place. The experimenter would return with the results of the 'Skills inventory questionnaire'. In the high power condition subjects were told that according to the skills inventory questionnaire they scored higher on leadership capabilities than their teammate and that they would therefore be leading the brainstorm assignment in the third experiment. They were told they would get to select the brainstorm topic and pick a top 5 of best ideas. Subjects in the low power condition were told that according to the skills inventory questionnaire they scored lower on leadership capabilities than

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[1] No males were used in this study, in an effort to reduce extraneous sources of variability. Also, a pre-test in Amabile's (1979) experiment showed that females produce artworks that are judged significantly more creative than those produced by males.

their teammate and that, instead of them, their teammate would therefore be selecting the topic, picking the top 5 and be leading the brainstorm assignment. At this point subjects in the high power condition choose a topic from five numbered cards presented to them face-down, this was done in the presence of the subject in the low power condition. The subject chose one 'topic' card and the experimenter announced: 'You chose number …, flowerpot. You are going to write down as many different uses of a flowerpot'. The experimenter then left the room and subjects got 5 minutes to separately write down as many ideas they could think of. The number of ideas, created during the brainstorm task, was assessed for every participant. After the brainstorm task subjects in the high power condition were allowed to make a top 5 of ideas they considered to be best. Low power subjects were only allowed to watch and had no influence on the top 5. The fact that one of the two subjects could influence the outcome, 'choose' the subject and scored higher on leadership capabilities, while the other could not, should result in a dependable relationship and a power difference between the two subjects.

Environment Manipulation. Subjects completed our creativity assessment in two different environments. Half of the high- and low-power subjects completed the creativity assessment in a creative environment; the other half completed the task in a non-creative environment. Creativity was assessed using a collage task. In the creative environment condition subjects worked on their collages in a room where the walls were filled with different collages made by previous participants. In the non-creative environment condition subjects worked on their collages in a blank room that only housed a table and a chair. There were no objects in the room besides the table and the chair.

Creativity Assessment. For our creativity experiment we used the Consensual Assessment Technique as it was used by Amabile (1979, 1982, 1983). This technique was proven to be the best way to test artistic creativity (Amabile, 1982; Baer, Kaufman, & Gentile, 2004; Kaufman, Baer, Cole, & Sexton, 2008). Subjects were told that they would be completing a relaxation task before entering the brainstorm assignment. Subjects were told this task's only function was to clear their minds before they would enter the second brainstorm task. They were then presented with their materials: one white cardboard (A3) one small glue-stick; and 150 pieces of

lightweight paper in various shapes and sizes. The experimenter told the subjects that they should use the materials presented to them freely, but that they could only use the materials presented to them in their design. Subjects were asked to make a design that conveyed a feeling of silliness, "as when a child is feeling silly". With this instruction it was insured that all subjects would employ the same theme in making their designs. Subjects were told they would see each others' final designs at the end of the experiment and asked if they had any questions. After that the experimenter said: "You have 15 minutes to complete your collage". The experimenter then left the room. When 15 minutes had passed the experimenter re-entered the room and asked the subject to stop working. The experimenter then presented them with a questionnaire designed to measure perceived power. The experimenter than fully explained the purpose of the study. Subjects that figured out the actual reason of the study beforehand were excluded from the analysis.

Scoring of the Creativity Assessment. The creativity of the collages was the dependent measure of this study. The collage designs produced by the subjects were judged by two separate Art teachers of the Junior Academy in Amsterdam. Judges each rated the 44 designs individually. Beforehand they were told which instructions and materials the subjects had received. They were showed samples of the materials subjects used in the experiment. Following Amabile's (1982) study, the designs were judged on 15 different dimensions, which were divided into two clusters: *creativity*: (a) creativity, (b) novelty of the idea, (c) novelty in use of materials, (d) effort evident, (e) variation of shapes, (f) detail, (g) complexity and *technical goodness*: (h) technical goodness, (i) organization, (j) neatness, (k) planning evident, (l) representationalism, (m) symmetry, (n) expression of meaning. In addition, we added another dimension measuring the representation of our theme, (o) silliness. A brief definition of each dimension was presented to the judges. Each dimension was judged on a continuous scale with 9 reference points marked (Appendix B).

External focus assessment. To test whether high-power individuals are less influenced by external cues when compared to low-power individuals, we checked for copycat behavior. In our creative setting the walls were filled with collages made by previous participants. We made sure that the walls always contained several collages that contained *depth*, *torn paper* and a design that went *outside of the boundaries* of the

presented A3 paper. For every participant we checked if the 3 dimensions were present in their design.

Results

Manipulation check. Participants completed two items measuring social power ('*I felt in charge of others*') and general power ('*I felt powerful*') using a 5-point scale. As expected, participants described themselves as feeling more in charge in the high-power condition compared to the low-power condition (M_{high} = 2.86, M_{low} = 1.23; $F(1, 42) = 32.17$, $p < .01$). Participants in the high-power condition also reported feeling more powerful compared to the low-power condition (M_{high} = 2.91, M_{low} = 1.77; $F(1, 42) = 10.71$, $p < .05$). Participants also completed an item measuring personal power ('*I felt independent*') and an item measuring empathy ('*During the task I thought about how the other person was doing*'). No statistically significant differences were found between the high-power condition and the low-power condition. Participants in the high-power condition did not report feeling more independent (M_{high} = 3.86, M_{low} = 3.45; $F(1, 42) = 1.76$) nor did they think less about how the other subjects were doing (M_{high} = 3.18, M_{low} = 3.00; $F(1, 42) = .20$).

Reliability. Spearman-Brown interjudge reliabilities were calculated for each dimension of judgment. In general the reliabilities calculated were quite satisfactory: 12 of the 15 dimension reliabilities were above .70 and the median reliability was .75. We are especially interested in the reliability of the major dependent measure of this study, creativity; this value was acceptable at .73. Dimensions with a reliability lower than .60 were discarded. One dimension of judgment, technical goodness, failed the acceptable reliability level at .54. Two other dimensions, neatness and organization (composition), had reliabilities at .65 and .62. These reliabilities were accepted bearing in mind that judges worked nearly 2,5 hours making 660 separate judgements.

Factor analysis. A factor analysis (varimax rotation) was performed on the dimensions of judgment to determine if the eight *creativity* dimensions and the seven *technical goodness* dimensions did in fact cluster together as they did in Amabile's

(1982) experiment. [2] The results in Table 1 suggest that the judgements clustered in this fashion, with the exception of two dimensions, technical goodness and effort evident.[3] For the creativity cluster 5 of the 7 dimensions (creativity, novel use of materials, novel idea, variation in shapes, and complexity) loaded high and positive on the creativity factor. In addition, the dimension we added: silliness, also loaded very high and positive on the creativity factor. The results for the technical cluster were less convincing, 3 of the 6 dimensions (neatness, planning and symmetry) loaded high on the technical goodness factor. The other 3 dimensions (technical goodness, organization and representationalism) did not load high on the technical goodness factor. The most striking dimension being technical goodness itself, which loaded higher on the creativity factor than the technical goodness factor.[3] Because of their low factor loadings, the dimensions effort evident, technical goodness, organization and representationalism were removed from further analysis. The dimension silliness was included for the creativity cluster.

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[2] The factor analysis was done on the average ratings of both judges for each of the 44 designs on each of the 15 dimensions. The dimension, expression of meaning, was later removed from the analysis because a correlation of over .90 was found with the dimension representationalism.

[3] The correlation of technical goodness with the wrong cluster, creativity, could be caused by the fact interrater reliability on this dimension was low: .54.

Table 1
Factor Analysis on 14 Dimensions of Creativity Judgment

Dimension	Factor loading	
	Factor 1: Creativity	Factor 2: Technical Goodness
Creativity cluster		
Creativity	**.87**	.37
Novel use of materials	**.87**	.22
Novel idea	**.85**	.27
Effort evident	.62	.66
Variation in shapes	**.84**	.31
Detail	.71	.51
Complexity	**.85**	.36
Silliness	**.91**	.15
Technical Cluster		
Technical goodness	.71	.50
Organization (composition)	.57	.61
Neatness	.30	**.82**
Planning	.36	**.83**
Representationalism	.34	.52
Symmetry	.05	**.87**

Creativity and technical goodness. A composite creativity measure was formed by combining the normalized rating of the creativity dimensions: creativity, novel use of materials, novel idea, variation in shapes, complexity and silliness. Means of this composite measure are presented in table 2. An ANOVA for the four groups (low power – non-creative environment, high power – non-creative environment, low power – creative environment and high power – creative environment) revealed no statistically significant difference between the four groups, $F(3, 42) = .07$. Opposed to our predictions, high power individuals were not more creative in the non-creative setting when compared to low power individuals. Also, high power individuals were not less creative in the creative setting when compared to low power individuals. In addition to the creativity cluster, we also used an ANOVA to see if there was a difference in technical goodness between our groups. As table 3 shows, no statistically significant differences were found between the four groups, $F(3, 42) = .46$.

Table 2

Mean Judge Ratings of Creativity

Power	Environment	
	Non-creative	Creative
Low	.015	−.045
High	.109	−.058

Table 3

Mean Judge Ratings of Technical Goodness

Power	Environment	
	Non-creative	Creative
Low	−.252	.133
High	−.074	.138

Besides the collage measurement of creativity, we also counted the ideas created by participants during the brainstorm task. No statistically significant difference was found between the high- and low-power condition (M_{high} = 9.59, M_{low} = 9.77; $F(1, 42)$ = .03). In addition, the ideas created were also compared between our four groups (low power – non-creative environment, high power – non-creative environment, low power – creative environment and high power – creative environment). No statistically significant difference was found between the four groups ($F(3, 42)$ = 1.07).

External cues. The collages made by participants were checked on 3 dimensions: *depth*, *ripped paper* and artwork *outside of the boundaries* of the presented A3 cardboard. A two-way analysis of variance revealed that the designs of low-power individuals contained more *torn paper* when compared to high-power individuals (Table 4; F = 8.51, $p < .01$). We did not find statistically significant differences for the dimensions *depth* and *outside of the boundaries*.

Table 4

Mean Torn Paper Scores

Environment (I):	Non-creative		Creative	
Power (II):	Low	High	Low	High
	.80	.20	.83	.67

I: F = 3.62, $p < .07$
II: F = 8.51, $p < .01$
I*II: F = 2.72, $p < .11$

Discussion

The present study was designed to assess the effects power has on creativity. We proposed that high power individuals would be more creative in a non-creative setting compared to low power individuals. We also predicted high power individuals to be less creative in a creative setting when compared with low power individuals. The results did not support these hypotheses. Power and environmental settings do not seem to influence creativity according to our data. In line with previous research, we also investigated if high power individuals were less influenced by external forces when compared to low power individuals. The results did not find support for this hypothesis.

Although the results do not support the hypotheses, there are some other factors that could have influenced the results and our data. The two clusters, that were found using a factor analysis of the 15 dimensions of judgment, did not exactly match the clusters found in Amabile's (1982) experiment. The difference in clusters could be caused by the low number of judges that was used in the study. Also our small population could have influenced the outcomes. The present experiment did not have a big population, N=44. The main reason for our small population, is the fact that this study is a Master Thesis, therefore limited money and resources were available. Using the consensual assessment technique, each of the collages made by participants needs to be scored on 15 dimensions by qualified art teachers. Two art teachers were found who were willing to do this for free. They spent 2,5 hours each judging all of the 44 collages. But one can imagine that adding more participants to the conditions and therefore increasing the time teachers will spent on judging, a compensation should be given to the judges. We would have loved to add more participants in the experiment, only it would be unethical to let volunteers work that many hours without a compensation, especially when publication of the research is unlikely.

Besides to the population size, the present study has some other limitations that should be examined. First of all there is the bottle-neck of this study, creativity itself. Creativity is such a complex concept, that it is hard to give one definition or measurement that reflects all aspects. In the winged alien experiment of Galinsky et al. (2008) they used copycat behaviour as a measure, or as an implication, of

creativity. As said before, this measurement does not include the part of the creative process where people use existing elements to create novel ideas. Just like their methods, our measurement also has a downside. Our measurement focuses on the artistic aspect of creativity, but other aspects like for instance problem solving are not included. Someone could be very creative in solving math problems, but when it comes to creating a novel collage they could do horrible. A high creativity score on the collage task does not automatically translate to a high score on overall creativity.

In addition to not being able to cover all of the aspects creativity beholds, we also tested between subjects. It could be that placing people in separate conditions gets overruled by their individual creative skill. Maybe creativity is so closely linked to personal and individual aspects that manipulations are not able to overrule its effect. Feist (1999) found links between personality and artistic and scientific creativity. Future studies should try and test within subjects. This way personal aspects of creativity are controlled for.

Future power research should investigate if the opposite of our hypotheses is true. It could be that power does not influence creativity, but that creativity has effects on power. From an evolutionary point of view this makes sense. Getting assigned to a powerful position will not make you more creative according to our findings. However, being highly creative could influence your chances of a high power position within a group. Future research should investigate if this is indeed the fact.

Moreover, our results show that the collages of the participants in the low-power condition contain more torn paper than those in the high-power condition. We conclude that this is not the result of copycat behaviour. The differences between the high- and low-power individuals are mainly caused by the differences in the non-creative setting. Because the non-creative setting did not contain any collages that could be copied, the differences between torn paper scores could not be caused by copycat behaviour. We also found no statistically significant differences for the other two dimensions, depth and outside of the boundaries. We should note that because of our small population size, the results of the external cues measurement are not reliable. Each group only contained 10 participants, which is not enough to make

assumptions about copycat behaviour. It would be advisable to re-test our external cues measurement with a larger population.

A central finding in this study is the fact that our social power manipulation worked. Our results did find a significant difference in feelings of power between the high and low power conditions. The methods used in this study could therefore be used in future power research. Using actual social situations to manipulate participants narrows the gap between experimental research and everyday life. Using social situations in the lab is the best way to model real-life power situations. In the beginning of this study we were hoping to divide our participants into two groups, a group manipulated through priming and a group manipulated using actual social situations. Unfortunately, because of the time-consuming nature of the consensual assessment technique, it was not possible to include this condition into the experiment. It would be an interesting subject for future research, investigating which kind of power manipulation works best.

In conclusion, the present study is not meant to close the book on power and creativity, it just tries to be the next piece in the giant puzzle that creativity is.

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Appendix A. Leadership capabilities questionnaire

Deze vragenlijst wordt door psychologen in "assessment bureaus" gebruikt als instrument om bij kandidaten leiderschapskwaliteiten vast te stellen.

Lees de zinnen in de lijst aandachtig door en omcirkel vervolgens in hoeverre deze jou beschrijven als persoon.

1 = helemaal niet
2 = zelden
3 = soms
4 = regelmatig
5 = altijd

|						
1.	Ik houd ervan tot in detail te weten hoe dingen werken.	1	2	3	4	5
2.	Het afstemmen van ideeën op behoeften van anderen is gemakkelijk voor mij.	1	2	3	4	5
3.	Ik houd ervan om met abstracte ideeën te werken.	1	2	3	4	5
4.	Techniek fascineert me.	1	2	3	4	5
5.	Het begrijpen van anderen vind ik belangrijk.	1	2	3	4	5
6.	Ik kan goed het grote geheel bekijken.	1	2	3	4	5
7.	Een van de dingen waar ik goed in ben is dat ik dingen voor elkaar kan krijgen.	1	2	3	4	5
8.	Mijn grootste belang is het hebben van een goede communicatie met anderen.	1	2	3	4	5
9.	Ik ben gefascineerd door complexe organisatorische problemen.	1	2	3	4	5
10.	Het opvolgen van instructies vind ik gemakkelijk om te doen.	1	2	3	4	5
11.	Ik vind het belangrijk het sociale netwerk binnen een groep te begrijpen.	1	2	3	4	5
12.	Ik ben goed in het ervoor zorgen dat de taken op tijd af komen.	1	2	3	4	5
13.	Ik vind het een uitdaging om alle partijen samen te laten werken.	1	2	3	4	5
14.	Ik ben begaan met hoe mijn beslissingeneffect hebben op het leven van anderen	1	2	3	4	5
15.	Het denken over de normen en waarden van de organisatie waarvoor ik werk spreekt me aan.	1	2	3	4	5

Appendix B. Chart for scoring the collages

**Scoringslijst experiment Florian Hollander**   **Proefpersoon nr: ....**

1.   **Uitdrukking van betekenis (In hoeverre heeft de collage betekenis)**

0 ├─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┤ 100
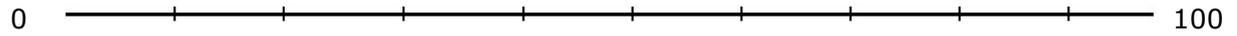
2.   **Representatie (Hoe goed representeert de collage de titel)**

0 ├─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┤ 100
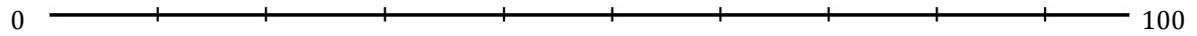
3.   **Gekkigheid (Hoe goed beeld de collage 'gekkigheid van een kind' uit)**
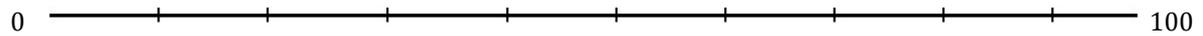
0 ├─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┤ 100

4.   **Details**
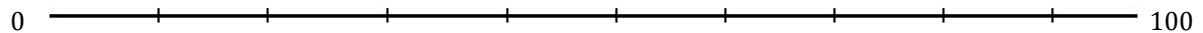
0 ├─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┤ 100

5.   **Mate van Symmetrie**
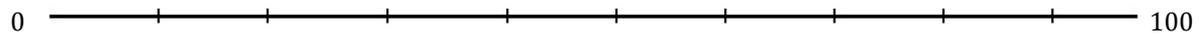
0 ├─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┤ 100

6.   **Duidelijke planning (In hoeverre is doordacht te werk gegaan)**
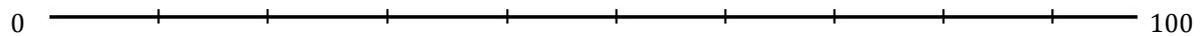
0 ├─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┤ 100

7.   **Vernieuwend (In hoeverre is de collage vernieuwend)**
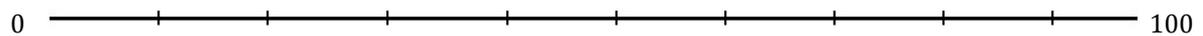
0 ├─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┤ 100

8.   **Vernieuwend gebruik van materialen**
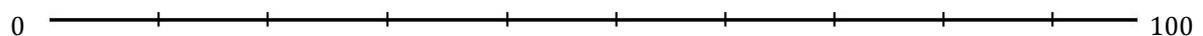
0 ├─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┼─────┤ 100

9.   **Variatie van vormen**

0 —————————————————————————— 100

10.   Blijk van inspanning (In hoeverre blijkt uit de collage dat de persoon zijn best heeft gedaan)

0 —————————————————————————— 100

11.   Complexiteit

0 —————————————————————————— 100

12.   Netheid

0 —————————————————————————— 100

13.   Gevoel voor compositie

0 —————————————————————————— 100

14.   Creatieve vaardigheid

0 —————————————————————————— 100

15.   Technische vaardigheid

0 —————————————————————————— 100