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*The Effect of Competition on the Creativity and  
Motivation of Swedish Schoolchildren*

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### Abstract

A study was conducted to investigate the effects of competition on creativity in a Swedish context. Ninety-nine 5<sup>th</sup> grade children were divided into two groups and examined on the hypothesis that competition in one group would create an extrinsic constraint and therefore diminish the intrinsic motivation resulting in less creative outcome. Furthermore we hypothesized that the participants in the competition group that reported themselves as more intrinsically motivated would be more creative compared to extrinsically motivated participants. The study did not provide support for the hypotheses; there was no significant difference between the competition group and the control group on creativity outcome. In addition the participants who reported themselves as intrinsically motivated did not produce more creative products than the participants in the control group. These results were not in line with those of studies conducted in an American context. A thorough discussion on why these differences between American and Swedish schoolchildren exist is conducted.

*Keywords:* Creativity, competition, intrinsic motivation, extrinsic motivation

In our age, creativity is highly sought after. The last decades have seen technological advancements in a pace that is unprecedented in history and a lot of these advancements are products of a creative process. The economy in the western world demands creative individuals to make them competitive in a fast and ever changing market. The companies that create products wants creativity, the research institutions that drives many fields of science forwards needs it and the demand on teaching and promotion of creativity in schools and similar institutions is at an all time high. This poses challenges to scholars in the fields of behavioral sciences in general and in the psychology of creativity in particular. What can we tell the institutions to look for in recruitment of creative personnel? How will we advise schools to form their curriculum and the teaching styles to promote creativity? And of course what can we recommend to avoid squelching creative processes?

For an individual to do something creative whether it be studying for an exam or creating a piece of art he or she needs the motivation to do it. It has been argued that the creative process is driven fourth by motivation and therefore could not exist without a fairly decent amount of it (Amabile , 1996). That motivation is important for schoolchildren is an understatement. The learning process in school is something everyone can relate to as having its ups and downs, motivation-wise.

The process of children's learning and the processes of creativity have many similarities and are sometimes hard to distinguish from each other. Children experience and perceive the world around them by interacting with and internalizing objects and concepts. Each of the steps in this endeavor encompass creative processes since most new concepts and objects need a novel way of thinking and acting for the child to be able to understand and interact with them. How then do we promote this novel thinking to foster creative children that grow up to be creative adults? What kind of motivational tools shall teachers pursue to make learning the optimal creative experience for the children?

A lot of studies on this subject have been performed in the United States and elsewhere (Amabile & Hennessey, 2009; Amabile, 1996; Amabile, Hennessey and Martinage, 1986; Hennessey, 2003). There is on the other hand, in Sweden, only sparse scholarly experience from the field. The findings in the US suggest that motivational factors that are external to the child (such as rewards and evaluations) have a lessening effect on creativity in schoolchildren whereas the Swedish studies that have, to a part, examined this found no such connection. This gives rise to an interesting question; is there really a difference between American and Swedish children when it comes to motivation and creativity? The answer to this question will give rise to a plethora of follow up questions and research on the area. The focus in this study will lie on answering that first

question by examining how competition affects the creative performance of schoolchildren in Sweden.

#### Theoretical framework

In 1950 the researcher J. P Guilford (1950) published an article named “Creativity” in an effort to make the neglected field of creativity research known to his peers. This essay is written a little more than 60 years after Guilford’s attempt to make his fellow scholars see the potential benefits of studies concerning creativity as a personality factor and the field of creativity research has changed a lot during the last decades. The forms of creativity research include not only studies of creative persons, as it did in the beginning, but increasingly more focuses on environmental impact in subjects such as group, leadership or different contexts and cultures.

#### *What is Creativity?*

*The Four P’s of Creativity.* Most outlines of creativity research use the four P’s that Rhodes (1961, referred to by Beghetto, Kozbelt & Runco, 2010) stipulated. The factors are *person*, *process*, *product* and *press*, and creativity has been studied from each of these viewpoints, and these in their turn have several different sub-factors. Examples of sub-factors that involve creativity under the more all encompassing factor *person* are cognitive abilities, biological traits and biographical traits. This factor speaks about how individual traits of different origins make a person more or less creative. It can be how an individual is neurologically wired, what kind of upbringing an individual has had and how these combine to create a base for the creative process, which brings us to the next factor of interest. This factor is *Process* and it refers to mental processes that lie behind ideas in creative work. *Product* is what it sounds like, the outcome of a creative process, either something formulated in words or something physically created, like a piece of art or a breakthrough theory in science. *Press* is referring to the environment in which an individual lives, thinks and acts and how this might influence creativity and creative productivity (Beghetto et al., 2010).

The last point is something that for a long time was neglected in mainstream creativity research which was first pointed out by Teresa Amabile (1982). She saw the lack of contextual approach in the field and broke new ground in fusing creativity research with social psychological theories.

*The Eminent Big-C and the Everyday Little-c.* Much of the research on creativity stems from the human fascination of extraordinary people who do extraordinary things. It may concern both the fantastic paintings and innovations of da Vinci or the special theory of relativity by Einstein, who changed our entire perception of the physical world. This has made scholars ask what common factors these individuals share, how eminence is formed, what mechanisms are behind extraordinary

endeavors and if it is something that can be taught or learned? Research on creativity has thus often been research on the lives of great creative geniuses. These kinds of studies of the grandiose and exceptional are called *Big-C* creativity (Beghetto & Kaufman, 2009).

As a contrast to this view there is *little-c* creativity. This notion concerns the everyday creativity performed by an individual who develops a novel way of solving a practical problem at home or a new way of addressing a work issue that has been bothering him or her. This form of creativity is a bit harder to define and to separate from other traits such as professionalism, intelligence or simple handiness (Beghetto et al., 2010). For researchers in the field of creativity, such a distinction between little and big is a huge help since it defines different ways to engage in different kinds of creativity. Beghetto and Kaufman (2009) capture the essence of little-c creativity:

The standard definition is most appropriate for little-c creativity. If a friend shared a painting with you, he or she would not expect you to begin your critique by comparing it to Van Gogh or Monet. Rather, you would be expected to explain whether you found it to be unique and aesthetically pleasing (with in [sic] the context of what you know about that particular style of painting and you friend's current level of artistic accomplishment). (s. 3)

The research on little-c creativity is probably more worthwhile to society (municipal- and governmental institutions and corporations). One example is the goal of creating environments in which creativity can grow, which is important in many of the aforementioned institutions. The little-c approach is more applicable for people in general (Beghetto & Kaufman, 2009).

To broaden and complete the picture of everyday creativity, as opposed to the eminence in the big-C category, Beghetto and Kaufman (2009) proposes a further division of the little-c concept. They call this sub-category mini-c and it is formulated to encompass creativity mostly in children and students. When students learn something new or come up with a way to solve a problem they are creative in their own right. Not creative in the sense of true eminence, not in the sense of coming up with innovative solutions that no one else has thought of but creative and innovative by themselves and for themselves. Mini-c is created to give researchers a way of addressing the creativity that is constantly ongoing in the learning process that all younger students and children go through without having to compare them to creative graduate students or professionals.

### *How to Measure Creativity*

The definition one chooses for creativity also defines the means to measure it. Many widely used definitions of creativity focuses on the creative *product*, since this is easier to measure than the process itself (Amabile, 1996). The criteria for “creative” that Amabile (1996) mentions is that the response to the task is: “... a novel and appropriate, useful, correct or valuable response...”. Then

what can be considered novel and appropriate? Several researchers assert that there has to be an agreement among experts to decide this (Amabile, 1996; Csikszentmihalyi, 1996). The consensual approach used by Amabile (1982) depends on the evaluation from several people to determine what is creative and what is not. This approach stipulates that there is an observable quality called “creative” and this is what persons in general see when they judge something to be creative.

One of the most used tests to measure creativity by judging the product of a creative process is the Torrance Test of Creative Thinking (TTCT). This test battery is judged on the basis of four different dimensions. The four dimensions that are thought to encompass creativity is firstly, *fluency*, which is a measurement of the quantity of the ideas that an individual produces. Secondly, *flexibility*, regards a variation in the ideas that an individual produces. Thirdly, *elaboration*, is how thoroughly worked through the ideas is. Fourth and last, *originality* is the ideas that the individual does not share with others but are rather alone in conjuring up (Torrance, 1962).

*The Consensual Assessment Technique.* The consensual assessment technique (CAT), as developed by Amabile (1982) in line with her definition, is a method of rating creative products. There are several different criteria that need to be fulfilled. The first criterion is that the judges need to be experts in the field that is in question of rating. Secondly they need to rate the work individually and not discuss the rating with others. No formal definition of creativity is to be provided to them. Third and last the creativity is to be judged in comparison with the other creative products and not to any universal standard.

Tests judged with CAT uses material that asks the participants to create something, such as a collage or a poem. Creative products are judged not just as way of thinking as in some of the TTCT-tasks in which mostly divergent thinking is deemed to be assessed (Amabile, 1996).

#### *The Definition of Creativity Used in This Paper*

We aim to research what could be categorized as little-c creativity or even mini-c creativity since schoolchildren are in focus in this study. Our definition of creativity is given by the CAT and thus it is the creative product that defines what we call creativity.

#### *What is motivation?*

Early on, the research paradigm of motivation was based on the assumption that learning emerged from conditioning. As a natural consequence the theories of human motivation at this time focused on externally given rewards and therefore on *extrinsic motivation*. This limited the scope for scholars in the field and the ruling model did not explain findings that were made in the 1950s and forward such as motivational factors that seemed to stem from the individual itself. These findings came to be known a theory of *intrinsic motivation* (Lepper, Sethi, Dialdin & Drake, 1997).

Robert White (1959) was a pioneer in the theoretical development of 'effectance' that was later to be known as intrinsic motivation. He made conclusions by doing experiments and observations on both animals and humans with environmental manipulations. These experiments made him theorize that there was an intrinsic factor of motivation in subjects to complete or master different task no matter if there was an external reward.

In the 1973 (Lepper, Green & Nisbett) a Stanford research group showed how external reward could decrease the intrinsic motivation in a series of experiments. Different groups were to complete a drawing task and some got instructions that they would receive a reward afterwards and some did not. The participants were drafted due to their intrinsic interest in these kinds of drawing exercises. The researchers found that children who were promised a reward lost interest in the task itself and the quality of these children's drawings was also assessed to be lower. It was hypothesized that the interest in the task was reoriented along with the motivation from inside to the outside reward.

#### *How to measure intrinsic versus extrinsic motivation*

Harter (1981) presents a scale to measure motivation in children called *A Scale of Intrinsic versus Extrinsic Orientation in the Classroom* (SIEOC). This model was highly inspired by White's (1959) theories on motivation but was reshaped to fit an empirical testing situation, resulting in a self-report scale. The scale aims to capture five dimensions in the classroom situations where children could rate themselves as either intrinsically or extrinsically motivated. The dimensions according to Harter (1981) are:

(a) learning motivated by curiosity versus learning in order to please the teacher, (b) incentive to work for one's own satisfaction versus working to please the teacher and get good grades, (c) preference for challenging work versus preference for easy work, (d) desire to work independently versus dependence on the teacher for help, and (e) internal criteria for success or failure versus external criteria (e.g., grades, teacher feedback) to determine success or failure.

In the extensive study performed to validate the test it was found that the dichotomy between intrinsic and extrinsic was not apparent in every case. Rather a combination of the two could be present in some cases, giving a curious child for whom attention from the teacher is also important (Harter, 1981).

Later research, by Hendelung Corpus, Iyengar and Lepper (2005), has criticized SIEOC on this point, claiming that a dichotomized scale does not give a realistic view of children's motivational traits and is not applicable in every situation. In the dimensions (a) and (b), regarding whether the child prefers to work out of curiosity and for one's own satisfaction or to please the

teacher and get good grades, there are strong indications that at children may be working for several of these reasons, why a partition into “either-, or” may be undesirable in measuring motivation. Items regarding a desire for easy work versus challenging work, dimension (c), could very well be linked to the task at hand and may in some cases not measure a trait but rather a state. The same thing goes for dimension (d), whether the child desires to work independently or ask the teacher for help, in which a child very well could desire to work independently up to a point when they decide that the fruitful action is to ask the teacher for help. Hendelong Corpus, Iyengar and Lepper (2005) helps to show that intrinsic and extrinsic motivation can and do coexist in the classroom situation by an assessment of a revised SIEOC where children was able to rate themselves as both extrinsically and intrinsically motivated.

### *Creativity, Context and Motivation*

Individuals do not act solely by themselves and creative processes are more or less always conducted in relation to others. Some examples are if a problem of which an individual seeks a solution also affects others or if an innovation that an individual strives to craft benefits other people. Even creativity in art is generated in a social context and factors of other people and the environment cannot be neglected. This influence of the social context often comes in form of motivation, which in turn influences the creative process. Without motivation there would be nothing to drive the process of creativity forward (Amabile & Hennessey, 2009).

Motivation is one of three parts in Amabile’s (1996) model of creativity. The first part is *domain-relevant skills*. This includes all kinds of skills that are relevant to the area or field in which the individual is active and attempting to be creative. For a scientist to come up with a creative notion about existing research or breaking new ground he or she must be very well schooled in that field of science. Both factual and technical knowledge is needed as a base for creative processes. A painter who wants to create a masterpiece cannot do so if he or she possesses only a mediocre talent with the brush. These skills depend on the innate cognitive ability, education, perception and motor skills of the individual. The second factor in creativity is *creativity-relevant skills*. These skills are more specifically relevant when it comes to creativity. A whole lot of scholars can have great factual knowledge in their respective field and still not being able to conceive a single unique or truly creative idea. The same thing applies to painters where only technical skills might make them able to work with painting portraits but technical skill alone is not enough to make creative masterpieces. The last, and for us the most important factor, is called *Task motivation*. This includes the attitude that the individual has towards the task at hand. Creative processes are facilitated when the individual is intrinsically motivated. This is that the motivation comes from inside of the person



in the form of a joyful feeling towards the task or a willingness to perform the task for its own sake. Extrinsic motivators are present when there is a reward for completing the task or if the individual knows that the work is going to be evaluated by someone else (Amabile, 1996).

Since motivation is such an important part of creativity, research on motivational factors goes hand in hand with research on creative processes. Several studies have found linkages between these two and the focus in these studies lie on environmental factors that influence motivation, which in turn influence the creative process. Individuals that are intrinsically motivated to do a task is more likely to deem this play, rather than work. These two forms of motivation are thought to stand against each other; one is either intrinsically motivated and creative or extrinsically motivated and less creative. The occurrences of extrinsically motivating factors constrain intrinsic motivation and thus lessen the likelihood of a creative process and product (Hennessey, 2003).

The external factors in extrinsic motivation often arise from outside of the task itself, and take the form of some kind of reward or the belief that the task is going to be evaluated or criticized (Amabile, 1996).

Amabile (1996) gives an illustration of the constraining effect that extrinsic factors can have on creativity with the aid of a metaphor, comparing the situation to a maze. In this metaphor the maze is a task with one starting point and several different, more or less creative outcomes, or in the maze several different exits. One of the exits is the fastest, straightforward way out. This is the path most likely to be chosen when you are expecting to be evaluated or if you can expect a reward on completion of the task. The alternative routes and more creative ways of exiting the maze will be neglected due to the focus on the reward or evaluation.

There are certain situations where rewards do not lessen the creative process. These are mostly situations when the reward is given in a supportive way, to promote competence and most importantly rewards something that the individual was already intrinsically motivated to do. These effects of boosting intrinsic motivation and therefore creativity happen most often when intrinsic motivation is already strong (Amabile & Hennessey, 2009).

In a study by Amabile, Hennessey and Martinage (1989) the effect of so called intrinsic motivation training was tested on participants on creativity tasks in a reward condition and a non-reward condition. The hypothesis was that if intrinsic motivation could be damaged by reward a manipulation that aimed to heighten the intrinsic motivation in the participants could counter out this effect and thus proving a linkage between the concepts. The non-reward group received training that had had nothing to do with motivation and the reward group received a specific training aimed to improve intrinsic motivation. The group that had received intrinsic motivational training was

thought to be protected against the constraint of reward and would not suffer a decline in creativity. The hypothesis was confirmed since the group that had received specific intrinsic motivation training and participated in the reward condition not only was protected against a decline in creativity but actually showed higher creativity than the other group in the study. The effect was a bit surprising since the effect of reward was not only countered but had an absolute contrary effect than usually observed. This led the scholars to suggest that a solid intrinsic motivation in an individual would protect against constraints and perhaps even help by making reward heighten the positive feelings towards a task.

#### *Other Voices on Creativity and Context*

Although the theories of Amabile is the cornerstone in many studies on creativity there are voices claiming that the connection is not as simple as that intrinsic motivation increases creativity and extrinsic motivation decreases creativity. Regarding the relationship between reward/competition and intrinsic motivation there is also those who advocate a more complex bond than the mere decremental effects on intrinsic motivation cited earlier. A meta-analysis presented in an article by Eisenberg and Cameron (1996) on the effect of reward on intrinsic motivation showed a diverse picture in which reward could heighten, lessen or leave intrinsic motivation untouched.

A couple of main points on why there was such a large diversity among the studies were proposed by Eisenberg and Cameron (1996). From the meta-analysis they derived that diversity occurred due to between group differences being small in comparison to individual differences in the reward/non-reward groups. Furthermore they saw that the effect of reward on intrinsic motivation was greatly dependent on how the reward was administered. When combining findings of the effect of rewards on intrinsic motivation it is too small to be detected by the researchers' statistical methods. Regarding creativity these researchers found that reward can actually heighten creative output when given as compensation for a task involving a high degree of creative performance. The conclusion that they draw is that reward can actually have positive effects on creativity if used appropriately.

Another variable to consider in the study of the effects of reward on motivation is personality factors. It has been showed fear for comparison of one's work with others is larger than any effect of a reward. It weighs heavier for shy people to avoid this kind of comparison than to receive a reward (Cheek & Stahl, 1986).

Amabile (1996) proposes that novelty and usefulness are two of the major components of creative ideas. Erez and Nouri (2010), in a review on the cultural aspects of creativity, suggests that these two notions is emphasized in dissimilar degrees in different cultures. The starting assumption

of these scholars is that specific creative skills and mental processes are normally distributed across cultures. Nevertheless they propose that social context and task motivation may differ in significant ways from culture to culture and that the social context strengthens the influences of cultural values on a person's creative actions. Further they propose that a neutral context, without the influence of peers, might remove these differences since it removes the cultural aspect of the social context. The opposite is proposed for work conducted in a group, where cultural aspects and differences are accentuated.

#### *A selection of earlier research*

An early study of the effects of evaluation, an extrinsically motivating factor, on creativity was conducted by Amabile (1979). The participants consisted of 95 women who were told that they were to take part in an art activity. The women were divided in different groups with slightly different instructions on how to complete the art work and half of them were told that they would be evaluated on completion of the task. In a comparison between the groups creativity was rated by 15 judges. The study found that the groups who were told that they would be evaluated showed significantly less creativity in their work.

A two studies conducted by scholars of Brandeis University (Amabile, Hennessey, Grossman, 1986) investigated the effects of reward on three different creative outcomes, collage-making, problem solving and storytelling. In addition to this the participants filled out a SIEOC to report intrinsic versus extrinsic motivation and results showed a correlation between intrinsic interest and creativity. They used the CAT in rating creative products and saw that the non-reward group received higher ratings of creativity on the storytelling task by the judges. On the problem solving and collage-making tests the study found no significant difference between groups. In the second part of the study the collage-making test was used again, since this had shown a tendency rather than a significant result on the first study, indicating that reward dampened the creative outcome of participants. This second study was designed so that 80 schoolchildren as participants in were given different choices about completing two separate creativity tasks. Results showed that the children who chose to work for a reward produced less creative products than their counterpart who didn't have a choice. This study gave empirical evidence to the notion that extrinsic motivation produced by reward provided a constraint on creativity since both a verbal and a non-verbal task rated with the CAT showed that the most extrinsically motivated participants showed the least amount of creativity.

The above referenced study of Amabile, Hennessey and Grossman (1986) puts forth a notion on the nature of creativity which they back with empirical evidence. However to form a universal

theory on the subject we must investigate if these findings could be found in other places in the world besides from the US. There are some indications that cultural differences might influence creativity (Erez and Nouri, 2010) and as a result of this it is interesting to investigate how Swedish participants act when having supposed extrinsic factors influence a creative task?

In Sweden, Levin (2008) conducted two studies where the first one included 76 children in the ages 8-12 as participants and aimed to examine the relationship between creativity, competition and levels of anxiety. This study divided the children into different groups according to age and the scores on an inventory designed to measure levels of fantasy. Both groups, aside from finishing a fantasy inventory and an anxiety inventory took part in a collage making test and filled out an inventory on motivation. The instructions that were given to the children was specific in saying that they should create something “silly” with a number of different colored paper pieces in a variety of forms, glue and a piece of white cardboard. One of the groups was told that it was a competition and the winner/s would get a prize. The other group was just told to make something silly without any word of a prize. The collages were graded using the CAT by eight teachers with no earlier knowledge of the hypothesis but experience with the age group and creativity in children. The inventory of motivation used was an abbreviated version of Harter’s (1980) *Scale of Intrinsic versus Extrinsic Orientation in the Classroom*. The findings in this study were that the two groups (competition and non-competition) did not differ significantly on creativity scores.

The main aim of Levin’s (2008) first study was to investigate the correlation between anxiety and the possible detrimental effects this could have on creativity. The designation in groups of competition and non competition intended to create a stressful situation. The focus on anxiety report scales could very well have impacted the creativity levels and one cannot from this study draw a certain conclusion whether or not competition/reward has a detrimental effect on creativity in a Swedish context.

The main aim of the aforementioned study was to examine the connections between anxiety levels, competitive environment and creativity and in our opinion there were a couple of possible confounders in the design. The filling out of the anxiety inventory used could very well have affected the children in a way that could be seen in creative outcomes. Another confounding factor can be that the researcher gave the instructions to the participants herself; there is an obvious danger of biased reactions and behavior from the experiment leader in this case. Furthermore, she did neglect to sample a baseline of creativity for the participants as she did not measure the participant’s creativity before the collage making tests in the two groups. This means that there was nothing to evaluate whether her groups were different from the start or not regarding creativity. A Question

that arises is if one group perhaps had more creativity relevant skills from the beginning and therefore was more immunized against a competitive environment?

The second study performed by Levin (2008) had a similar goal to this one; to investigate how trait motivation affected creativity. There were also two groups, one competition and one non-competitions and Harter's (1981) scale of motivation was used to rate trait motivation. Results indicated that there was a weak correlation between high rated intrinsic motivation and higher levels of creativity. On the other hand there were no findings of between group differences on creativity and the null hypothesis could for that reason not be rejected. An analysis of variances showed a weak effect of intrinsic motivation on creativity. However, in the analysis motivation accounted for only 7% of the total variance. The conclusion in the study was that creativity seemed to be resilient to the extrinsically motivating factor of competition and that this result stood in contrast to earlier research. What was suggested was that a baseline measure of creativity could be used to further investigating the dynamics of creativity as a variable. Cultural differences and differences between classroom situations were discussed as factor that could have produced the difference between earlier American research and these Swedish findings.

In Levin's (2008) second study the confounding factor of a different research aim was gone. However the possible bias from the experiment leader was still present since she herself once more was the one that gave instructions to the participants. This study was the first of its kind on Swedish schoolchildren and since the result stood in contrast to earlier research it is highly interesting for us try to replicate this study and to pick up some of the loose ends that Levin left and listen to some of the advice given in her concluding discussion, mainly to sample a baseline for creativity. She did not find that extrinsic motivation and competition was detrimental to creativity, rather the opposite.

#### *The aim of this study*

Earlier studies in the field demonstrate that a somewhat standardized and accepted truth about motivation and creativity is that extrinsic factors, such as competition and reward, will lessen creative outcome. We have also presented some studies that point in a slightly different direction which gives rise to a questioning of the abovementioned framework of theories. Further research on the subject is wanted since there seems to be a variety of social contexts rather than just one. Participants in different countries seem to react in a diverse manner and different ways of administering a reward give rise to various outcomes.

This study aims to investigate how social context - a competitive versus a non-competitive environment - affects the creativity of schoolchildren in Sweden. This will be constructed by giving

one group of children the instructions that the task will be evaluated and that a reward will come to the ones who perform the best collage and have a second control group.

In this way the competition condition consists of two elements that are believed to be extrinsically motivating, evaluation and reward (Amabile, 1996).

The effect of competition on creativity in a Swedish context has been researched by Levin (2008) but aforementioned critique against her studies goaded us to do a follow up study. We saw several items on which there were potential for designing an improved replication study to investigate the relationship between competitive environments and creativity.

### *Hypotheses*

*Hypothesis I:* Our main hypothesis asserts that children participating in the competition condition group will be judged less creative than their counterparts in the non-competition condition group. We believe that this will be the case on account of the manipulation factor that gives the competition group an extrinsically motivating effect.

*Hypothesis II:* We believe that children that score themselves as intrinsically motivated will be somewhat protected against the competition condition and thus be judged to be more creative than their fellow students in the competition condition which did not report a high intrinsic motivation. Furthermore we believe that high intrinsic motivation will also have a heightening effect on creativity in the non-competition group.

*Hypothesis III:* We believe that the participants in the non-competition group will find the creativity task of collage making easy, enjoyable and deem their participation to be play rather than work. We believe that the competition group on the other hand will find the task harder, more tedious and deem it work rather than play.

## Method

### *Participants*

This study had 99 participants (42 girls and 57 boys). Their mean age was 11 and the age range was 10-11. The children who participated in this study were drafted from four different schools in southern Sweden. The attrition number was 17 children who did not participate in all parts of the study or were not given parental permission and were because of this excluded from the study.

### *Measures*

*Circle-task test.* To get a baseline measure of creativity we carefully selected a non-verbal test of creativity that was administered in the first out of two separate occasions of testing. The circle-

task test (Torrance, 1962) is designed to measure children's non-verbal creativity. The test sheet consists of circles and the children are instructed to "draw as many different things with these circles as you can think of". Three different judges scored these test on a scale from 0-7 on the basis of "originality" to give a measure of creativity. The point 0 was awarded those participants who did not draw anything and the 7 was awarded those who were judged most original in their designs. A measure of reliability is reported in the 1998 manual of the TTCT to range between .89 to .94 using the method Kuder-Richardson 21 (Kim, 2006).

Inter-rater reliability between the judges in our batch of testing was a cronbach's alpha of 0,78. This slightly lower correlation could be due to the fact that we used only one variable for the judges to consider, instead of three that is usually used.

*A Scale of Intrinsic versus Extrinsic Orientation in the Classroom* (SIEOC). The intrinsic-and extrinsic motivation test (Harter, 1981) is designed to examine the Children's intrinsic versus extrinsic orientation toward learning in the classroom. The test seeks to measure how the children see themselves in school by asking them to report their motivation and behavior. There are three major dimensions of intrinsic versus extrinsic motivational orientation in the abbreviated version used in this study: challenge seeking (preference for challenging work versus preference for easy work), curiosity seeking (learning motivated by curiosity versus learning in order to please the teacher) and autonomous mastery (desire to work independently versus dependence on the teacher for help). The maximum score for the test is 180 points and the scores is on a 5-point Likert-type scale with the alternatives "is almost never true", "is rarely true", "is sometimes true and sometimes not true" "is often true" and "is almost always true".

For this study we used a redesigned test which consisted of 36 items where half of the questions were items where high points gave intrinsic motivation scores and the other half of them gave extrinsic motivation points. We wanted the children to be able to score themselves as both extrinsically motivated and intrinsically motivated on the items since this is better in line with recent developments in motivation theory. In the original test all the items were dichotomized and the children had to score themselves as either extrinsically or intrinsically motivated on every task.

Harter (1981) reports on the reliability of the test over a large sample of studies. With a Kuder and Richardson formula 20 reliability ranges from .68 to .83. Test-retest reliability data is also available and ranges from .48 to .76. In our study the Cronbach alpha coefficient for intrinsic motivation was .90 and for the extrinsic motivation .81.

Eva Hoff (2011) translated the test into Swedish and designed the version used in this study.

*Creativity task – Collage Making.* The main creative outcome of the study is measured by the

collage making, which is the dependent variable. This non-verbal creativity test is adequate to measure artistic creativity since it does not depend on drawing abilities or other beforehand-learned abilities. Each participant was given a set of collage materials (white cardboard paper, 56 geometrical pieces made out of paper in different colors and glue) and was told to make a collage. The collage was rated on creativity by 7 adults with expertise with this age group. The rating is on a 7-point Likert-scale from “not at all creative” to “very creative”. These judges were blind to the hypothesis and had no knowledge that there were different groups in the study. To counter out effects of time and place effects the different judges saw the products in different orders as to not give benefit or lessen the gain for any product. The inter-rater reliability in this technique could be said to be the same measure as the construct validity. This is the case because the definition of creativity is based upon the judgments of the raters and the correlation between the different judges gives us a measure on how secure we can be that we have actually measured creativity. Numerous studies have been conducted by Amabile (1982) with this collage making method and inter-rater reliability ranges from .73 to .93 with seven or more judges. The discrepancy is depending on the background of the judges.

*Questionnaire about the collage making.* A short questionnaire was designed to capture the children’s thoughts on the process of collage making. A total of four questions were asked where three of them regarded how much fun they had, how hard they found the task and lastly how interesting the task was for them. This was rated on a 7-point Likert-scale from 1 being “boring” and 7 being “really fun” on the first question, 1 being “simple” and 7 being “really hard” on the second question and last 1 being “not at all interesting” and 7 being “Really interesting” on the third question. A last question with two alternatives was posed, whether the children considered their activities on the collage-making task to be work oriented or play oriented.

### *Procedure*

First we visited each of the four participating schools and handed out parental permission forms, informing the parents about the experiment and ethical aspects of the research. Once having received parental consent we proceeded with the first out of two test sessions that the children were to take part in.

*First test session.* During the first test session the children completed the Self-report test of intrinsic- and extrinsic motivation and the Circle-task test, measuring their trait motivation and baseline creativity. These tests took about 35 minutes for the children to complete.

*Second test session.* To protect the study from experimenter effect a blind experimenter managed the session of collage making. The instructions that our associate gave the groups were



strictly followed from a written copy provided by us. The population of children was split into roughly two halves, with 3 classes in each half. One half was given instructions to do the collage in a manner they found a bit “wacky” or “silly”. The second half was given the same instructions except that the children who made the five “best” (as judged by our associate) collages would receive a “cool” prize. During the second condition the five prizes were displayed and our associate demonstrated the function of the items to the children. The prizes were of different sorts and were carefully selected in order to give every participant something that he or she wanted and thus putting an extrinsic pressure on these participants. The group under non-competition condition is the control group in the study. The other group, under competition condition is the experimental group. The children carried out the collage making and this took 15 minutes. After the collages were collected the questionnaire about the collage making was handed out. An occasion was arranged in which seven judges were gathered to rate the creativity of the collages and each judge spent approximately one hour perceiving the designs and rating them. Among the judges some were professionals the teaching profession and some scholars in the field of creativity.

## Results

### *Hypothesis 1*

Descriptive data of the different tests are shown in table 1. “Creativity baseline” is the scores on the circle task test. “Creativity collage” is the mean of the sum of the judges ratings of the collages. The posts of “intrinsic motivation” and “extrinsic motivation” show the mean of the sum of points received on the questionnaire.

*Table 1. Descriptives.*

	Overall		Competition		Non-Competition	
	N = 99 M	SD	N = 54 M	SD	N = 45 M	SD
Creativity Baseline	7,13	3,28	6,8	3,58	7,53	2,87
Creativity Collage	27,27	6,71	27,93	7,06	26,49	6,26
Intrinsic motivation	64,21	11,95	65,02	12,76	63,24	10,96
Extrinsic motivation	50,29	10,13	50,09	9,85	50,53	10,56

We hypothesized that the children participating in the competition condition group would be deemed less creative, as defined by the CAT score on the collage making test, than the children participating in the non competition condition group. The inter-rater reliability of the judges on the

collage making test was a cronbach's alpha of .81. An independent-samples T-test was conducted to compare the creativity scores for the two different condition groups. There was no significant difference in scores for the competition condition group ( $M = 27,93$ ,  $SD = 7,06$ ) and the non-competition condition group ( $M = 26,49$ ,  $SD = 6,26$ ;  $t(97) = 1,06$ ,  $p = .29$ , two-tailed) The magnitude in the differences of means (mean difference = 1,44, 95% CI: -1,25 to 4,12) was very small (eta squared = 0,011). This means that only 1,1 percent of the variance can be explained by our manipulation.

To ascertain that the groups were similar in creative talent to begin with an independent-samples T-test was conducted to compare the creativity scores for the two different condition groups, but with none of the conditions present. There was no significant difference in scores for the competition condition group ( $M = 6,8$ ,  $SD = 3,58$ ) and the non competition condition group ( $M = 7,53$ ,  $SD = 2,87$ ;  $t(97) = -1,114$ ,  $p = .27$ , two-tailed).

### *Hypothesis II*

A two-way between-groups analysis of variance was conducted to explore the impact of motivation and condition participation on creativity. Participants were divided into four groups according to which condition they participated in and whether they scored themselves high intrinsically motivated or low intrinsically motivated (Group 1: competition condition – high intrinsically motivated; Group 2: non-competition condition – high intrinsically motivated; Group 3: competition condition – low intrinsically motivated; Group 4: non-competition – low intrinsically motivated). The interaction effect between condition participation and intrinsic motivation was not statistically significant,  $F(1,95) = 0,07$   $p = 0,79$ . There were no statistically significant main effect of intrinsic motivation on creativity,  $F(1,95) = 1,14$ ,  $p = 0,29$ .

### *Hypothesis III*

Descriptive data of the questionnaire on the thoughts of the collage making task is presented in table 2.

*Table 2. Descriptives.*

	Overall		Competition		Non-Competition	
	N = 99 M	SD	N = 54 M	SD	N = 45 M	SD
Questionnaire , Q1	6,32	0,87	6,28	0,81	6,38	0,94
Questionnaire , Q2	2,13	1,28	2,43	1,3	1,78	1,17
Questionnaire , Q3	5,46	1,18	5,48	1,16	5,44	1,22
Questionnaire , Q4	1,21	0,41	1,17	0,038	1,27	0,045

Independent sample T-tests were conducted on questions one through four. On question one, three and four there were no statistically significant effects. On question two however we found a significant effect.

On question one, “how much fun they had”, the difference in scores for the competition condition group ( $M = 6,28$ ,  $SD = 0,81$ ) and the non-competition condition group ( $M = 6,38$ ,  $SD = 0,94$ ;  $t(97) = -0,57$ ,  $p = .57$ , two-tailed) showed no significance. The magnitude in the differences of means (mean difference =  $-0,1$ , 95% CI:  $-0,45$  to  $0,25$ ) was very small (eta squared =  $0,003$ ). This means that only 0,3 percent of the variance can be explained by our manipulation.

An independent-samples T-test was also conducted to compare the answer on question two, “how hard they found the task”, between the groups. Here we found a significant difference in scores for the competition condition group ( $M = 2,43$ ,  $SD = 1,3$ ) and the non-competition condition group ( $M = 1,78$ ,  $SD = 1,17$ ;  $t(97) = 2,59$ ,  $p = .011$ , two-tailed) showing that those who competed found the task harder. The magnitude in the differences of means (mean difference =  $0,65$ , 95% CI:  $0,15$  to  $1,15$ ) was moderate (eta squared =  $0,065$ ). This means that 6,5 percent of the variance can be explained by our manipulation.

Regarding question three, “how interesting the task was for them”, between the groups there was no significant difference in scores for the competition condition group ( $M = 5,48$ ,  $SD = 1,16$ ) and the non-competition condition group ( $M = 5,44$ ,  $SD = 1,22$ ;  $t(97) = 0,16$ ,  $p = .77$ , two-tailed). The magnitude in the differences of means (mean difference =  $0,037$ , 95% CI:  $-0,44$  to  $0,51$ ) was very small (eta squared =  $2,6 \cdot 10^{-4}$ ). This means that only 0,026 percent of the variance can be explained by our manipulation.

On question four, regarding if they saw their task as work or play, there were no statistically significant effect between the competition group ( $M = 1,17$ ,  $SD = 0,038$ ) and the non-competition condition group ( $M = 1,27$ ,  $SD = 0,45$ ;  $t(97) = -1,19$ ,  $p = .24$ , two-tailed). The magnitude in the differences of means (mean difference =  $-0,1$ , 95% CI:  $-0,27$  to  $-0,067$ ) was small (eta squared =  $0,014$ ). This means that only 1,4 percent of the variance can be explained by our manipulation. An interesting notion, even though there was no difference between groups, is that 78 percent of the total population ( $N=99$ ) reported that they worked rather than played.

### Discussion

Our first hypothesis regarded a difference in creativity between the group in the competition condition and the group in the non-competition condition. We found no significant difference in

creativity and a slight tendency towards higher ratings of creativity in the competition group. This goes against much of the research on extrinsically motivating factors and their dampening effect on creativity (Amabile & Hennessey, 2009; Amabile, 1996; Amabile, Hennessey and Martinage, 1986; Hennessey, 2003).

Our findings, together with those of Levin (2008) demonstrate that the studies conducted in the US cannot easily be transferred onto Swedish conditions. Are there cultural differences between the US and Sweden that explains the differences? Is it a matter of difference in the school systems and the norms regarding competition that explains the results? One can argue that there is a big difference between how many extrinsically motivating factors that is present in the learning process and school experience on the whole for Swedish versus American children. An earlier more differentiated grading system and an early focus on competitive sports is one thing present in the US that Sweden lacks. The Swedish school system is perhaps more focused on group development and does not focus solely on individual accomplishments in the lower ages.

The participants in our study filled out the questionnaires and worked on the collage making task in groups of approximately 20 children in a classroom. The notions put forth by Erez and Nouri (2010) about how work in a group might accentuate the cultural values on creativity are highly valid in a discussion on our findings. It is hard to define Swedish culture as either strictly individualistic or collectivistic. We certainly share many points on individualism with the rest of the western world but still have a history of collectivistic solutions in our society. What the Swedish cultural values effecting creativity might be is hard to say but since the working situations for our participants was in a group setting it was open for influence of cultural values.

There seems to be cultural differences between the US and Sweden that gives rise to differences in the impact of competition on creativity.

The Swedish classroom context usually includes a lot of interaction among the students. Some scholars suggested that personality variables could play a role in working on creativity tasks when this is made under the pressure of non-formal evaluation of peers. Children that are shy or introvert might thus not be affected by a reward in the same way as children who do not possess these characteristics as described by Cheek & Stahl (1986). In the instruction given by the experiment leader in our study it was stated that the task should be completed individually. Despite this the participants were children and it was not entirely possible to control that they did not look at each other's work and that some effect of pressure from an audience was present. This does not explain our findings since we did not have a personality inventory and can therefore not comment on the variation of personality variables in our population. Furthermore there were no statistically

significant differences between the groups and we can assume that any eventual occurrence of shyness would be present in approximately the same frequencies in both groups.

We performed a check to control that the groups were fairly alike in creativity before the collage making task and there was no significant difference between the groups on the circle task test. The children in the non competition group had a higher rating of creativity in the pretest session but were outmatched by the children in the competition group on the collage making task.

The ANOVA performed to research *Hypothesis II* yielded no significant results regarding the effect of motivation on the groups' creativity. Our belief was that those participants who had rated themselves as intrinsically motivated and therefore had this as a trait would be protected against an extrinsic constraints such as the competition condition and reward.

The study by Lepper, Green & Nisbett (1973) asserted that external rewards could lessen extrinsic motivation, which at the time was a novelty in the field. The results of our study demonstrate that this may not be the case in a Swedish context.

The findings by Amabile, Hennessey and Martinage (1989) led us to believe that report of an intrinsically motivated trait in participants could equate somewhat to the intrinsically motivating state that participants in their study was put in by explicit training. The study by Amabile, Hennessey and Martinage (1989) did include an explicit motivational training aimed to enhance intrinsic motivation and it seems that reporting oneself as intrinsically motivated is not equivalent to this.

Our thought on this point is if the education in the Swedish school system work somewhat like the intrinsically motivation training employed by Amabile, Hennessey and Martinage (1989) and immunize the children against competition/reward, maybe even heighten their creative output. With this we mean that the children, regardless of condition participation, would have an intrinsic motivation and this is the reason why no significant difference occurred.

The Swedish classroom, as we perceived it, is filled with paintings and such and maybe creative work is such an intertwined part of school work that the competition condition did not affect the participants since they are used to perform creative processes in a milieu which includes rewards, evaluations and other possible external constraints. In a milieu like this the reward can definitely be seen as a bonus rather than a constraint as described by Hennessey (2003).

In *Hypothesis III* we stated that the non-competition group would find the test more enjoyable compared to the competition group and that this would show in the answers on question 1 in the questionnaire given. We did not see this and the null hypothesis will be kept regarding the question. The same goes for question three where we believed that the non-competition group would

state that they found the task more interesting than the competition group. And on question four we saw the same thing; the groups did not differ significantly on any of these questions. Our one significant difference was seen on question two, which asked the participants how hard they found the task. The competition condition group found the task significantly harder than their counterparts in the non-competition group. This can perhaps be seen as a result of the competition for prizes that we put on these participants and the pressure of evaluation from the experiment was probably a tangible factor in making them more extrinsically motivated and thus finding the task more difficult.

Although we found this significant difference in one of the questions our hypothesis cannot be deemed adequately confirmed since the other three questions shows no indication that any of the groups would be more motivated in any kind. The means are interesting to consider though, since they differ a lot from questions one and three on one hand and question two on the other hand. In questions one and three the means were quite high in population (Q1:  $M = 6,32$ ; Q2:  $M = 5,46$ ) indicating that the participants overall thought the task was quite enjoyable and interesting. On question two which has the same scale as the others the values were much lower ( $M = 2,13$ ) suggesting that the participants overall found the task to be quite easy. This prompts us to question whether or not we succeeded in creating an extrinsically constraining environment at all since the overall picture shows an interested and content population that found the task quite easy.

On the other hand, the procedure conducted by us closely matched the one in studies that demonstrated a detrimental effect of competition/reward on creativity (Amabile & Hennessey, 2009; Amabile, 1996; Amabile, Hennessey and Martinage, 1986; Hennessey, 2003). This prompts us to believe that there is a cultural difference in how the participants perceive the competition condition and rewards. The enjoyment of the task seems to be unaffected by reward and competition in a Swedish context.

Studies performed by Isen and Reeve (2005) on the influence of positive affect on intrinsic and extrinsic motivation has relevance in interpreting our results. The high ratings on enjoyment and how interesting the task was might suggest that the participants felt a positive affect or was in a positive mood whilst completing the task. What has been found by Isen and Reeve (2005) is that positive affect enhanced the intrinsic motivation of participants towards a task that they had deemed interesting. In addition they also found that positive affect also enhanced participants' attention towards extrinsic responsibilities.

As mentioned above our participants, in both groups, found the task enjoyable and interesting which suggests a presence of a positive affect. This might, as Isen and Reeve (2005) pointed out,

have led to an increase in intrinsic motivation towards the task that countered out the extrinsic constraint of the competition condition.

So, why is this effect generally not found in studies conducted in the US (Amabile & Hennessey, 2009; Amabile, 1996; Amabile, Hennessey and Martinage, 1986; Hennessey, 2003)? Again, the cultural differences seem to be the main thing that separates Levin's (2008) studies and our study from the ones conducted in the US.

Research by Hennessey (lecture, 12<sup>th</sup> of October 2011), not yet published, has showed trends on cultural differences in the nature of creativity. The findings made by her in the US (2003) were not able to be replicated in Saudi Arabia, South Korea and Mainland China. This suggests that our finding fit in to an international perspective on creativity research where we should ask ourselves what we can learn from each other. There is no one straight way of providing a creativity encouraging environment for everyone. Especially important do these finding become for international workplaces and educational institutions. Those that want to craft creative environments need to look at individual factors. An interesting thought would be to attempt to create an inventory where different known positive influences of creativity and motivation could be assessed so that a "creativity profile" could be built for every child and employee. This would the guide the education and workplace alterations to suit the individual. For example a child high in extrinsic motivation would perhaps benefit from a competitive environment whereas a child high in intrinsic motivation would not.

Some research has showed that the concept of creativity as used in the western world has been hard to interpret and use in the same way around the world. Studies have been duplicated, where significant results had been obtained in the US, in parts of Asia where the results differed completely. This is a research endeavor in progress and several studies on the matter await publication as we speak. Kyung Hee Kim (2005) proposes that the measures of creativity and motivation that western scholars use cannot be used satisfactorily in eastern Asia. A main point that he proposes is the vast difference in school systems, which he mean are based on ideology more than anything else. Education stems from cultural values of what is important to learn and teaching methods are highly influenced by cultural norms.

Although Sweden is usually considered to belong to the western world the differences in culture might be a factor to consider when performing research here. There might be a danger in assuming that the methods used in the US should automatically be appropriate in the Swedish context.

A more strict control of the participants' ability to collaborate and watch each other's work is

a point where our study could be somewhat improved. We have earlier pointed out that collaboration and pressure of being watched could both enhance the effect of cultural factors and also affect participants that are not comfortable in having their work evaluated by peers.

We have discussed the differences in school contexts and the classroom environments as factors that might have influenced the discrepancy between Swedish studies including our own and studies in the US. Further research could then perhaps try to exclude these factors and test the hypotheses in a more neutral environment.

Another improvement of our study could be to include one or more creativity tasks that use a verbal measure of creativity, such as storytelling.

As seen in our depiction of the research and theories in the fields of creativity and motivation the domain is multifaceted and involves a set of different views and opinions. Perhaps a full understanding of the relationship between motivation and creativity requires more of a synthesis of the different schools and directions. Our belief is that further research should also include collaboration with other disciplines. Psychology focuses on the thoughts and behavior of the individual and it is apparent that factors such as classroom environment, teaching styles and ideologies behind the school system plays a major part in affecting motivation and creativity.



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## Appendix A: First session questionnaires: TTCT &amp; SIEOC

Namn: \_\_\_\_\_

Flicka Pojke 

Födelseår: \_\_\_\_\_

Skola: \_\_\_\_\_

Vilka språk talar du hemma för det mesta?

Svenska Svenska och annat Annat 

Om annat, vilket? \_\_\_\_\_

*Om mig*

**Olika personer är olika. Läs varje sats nedanför och kryssa för ett alternativ som stämmer för dig. Det finns inget svar som är bättre eller sämre. Du ska svara på hur ofta det beskrivna sättet att vara stämmer på dig?**

**Hur ofta stämmer det beskrivna sättet att vara på dig?****Detta är jag...**

<b>Stämmer nästan aldrig</b>	<b>Stämmer sällan</b>	<b>Stämmer ibland, ibland inte</b>	<b>Stämmer ofta</b>	<b>Stämmer nästan alltid</b>
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ÖVNING: Jag gillar att vara ute på fritiden

**1** **2** **3** **4** **5** 

Ord som behöver förklaras:

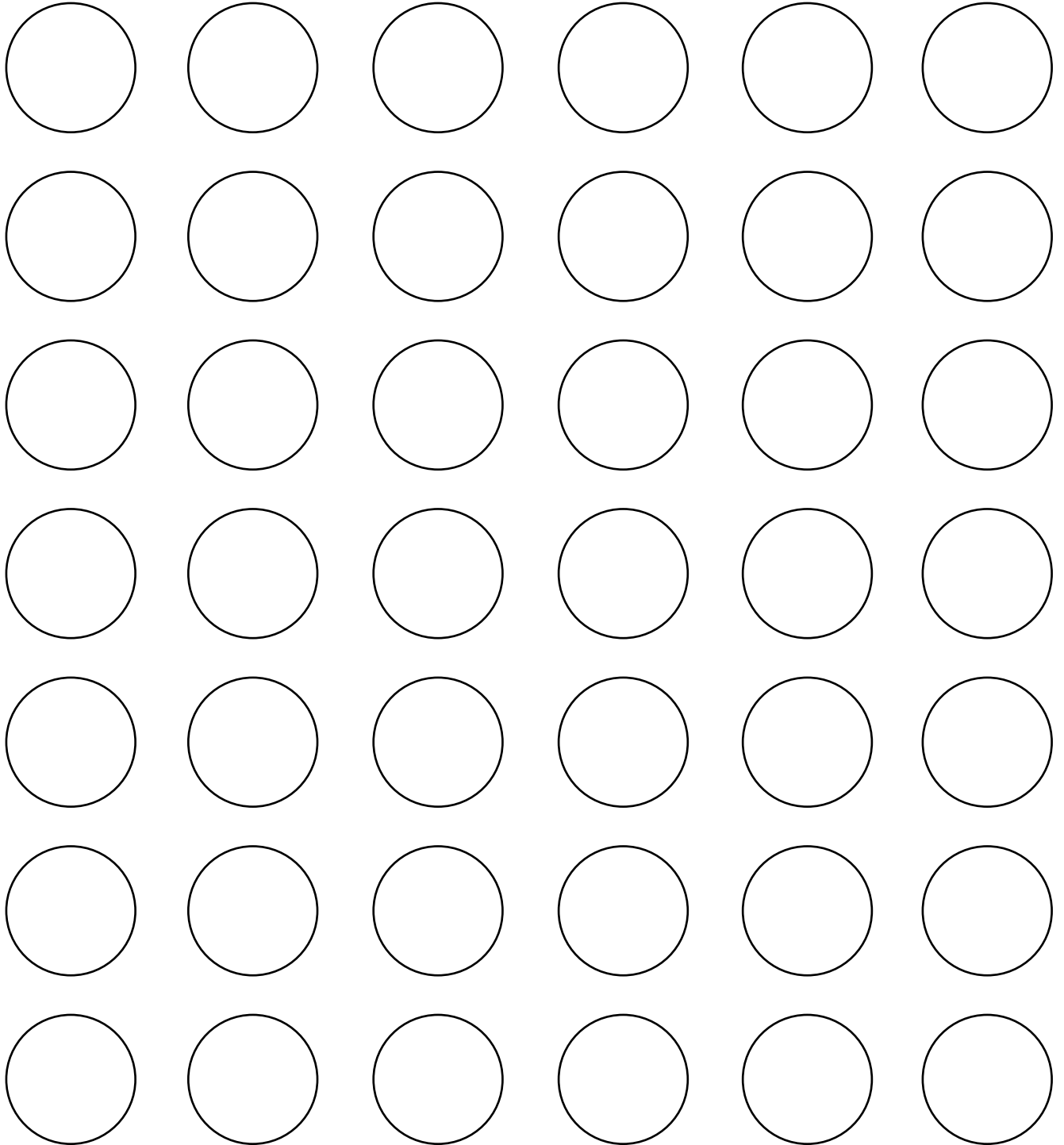
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## *Del 2: Mina teckningar*

Rita så många olika saker med dessa cirklar som du kan komma på.



## *Del 3. I klassrummet*

Hur väl tycker du att dessa meningar stämmer på dig?

<b>Så här tänker jag...</b>	<b>Stämmer nästan aldrig</b>	<b>Stämmer sällan</b>	<b>Stämmer ibland, ibland inte</b>	<b>Stämmer ofta</b>	<b>Stämmer nästan alltid</b>
1. Jag tycker om svåra uppgifter för att det är en utmaning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Jag tycker mest om lätta uppgifter som jag vet att jag klarar av	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. När jag inte förstår något direkt vill jag att läraren berättar svaret för mig	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. När jag inte förstår något direkt föredrar jag ändå att fundera ut svaret själv	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Jag löser uppgifter i skolan för jag vill lära mig saker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Jag löser uppgifter för att man måste göra det	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Jag tycker om svåra uppgifter för att jag tycker att det är kul att försöka lösa dem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Jag tycker inte om att lösa svåra uppgifter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Jag gör mina läxor för att läraren har sagt det	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Jag gör mina läxor för att jag vill ta reda på saker som jag vill veta mera om	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. När jag gör ett misstag vill jag själv hitta det rätta svaret	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. När jag gör ett misstag frågar jag hellre läraren om det rätta svaret	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Jag vill bara lära det jag måste i skolan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Jag vill lära mig så mycket jag kan i skolan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Jag läser om saker för att jag är intresserad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Jag läser om saker för att läraren vill det	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Om jag fastnar på en uppgift försöker jag lösa uppgiften själv

18. Om jag fastnar på en uppgift ber jag läraren om hjälp.

<b>Så här tänker jag...</b>	<b>Stämmer nästan aldrig</b>	<b>Stämmer sällan</b>	<b>Stämmer ibland, ibland inte</b>	<b>Stämmer ofta</b>	<b>Stämmer nästan alltid</b>
19. När jag är klar med en uppgift vill jag gå vidare med nya, svårare uppgifter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. När jag är klar med en uppgift vill jag fortsätta med enkla uppgifter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. När jag frågar om saker i klassrummet är det för att jag vill lära mig nya saker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. När jag frågar om saker i klassrummet är det för att jag vill att läraren ska se mig	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Jag tycker om att få hjälp av lärare för att planera mitt skolarbete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Jag tycker om att planera mitt skolarbete själv	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Jag tycker om ämnen där det är enkelt att lära sig de rätta svaren	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Jag tycker om ämnen där jag får tänka efter för att hitta de rätta svaren	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Jag tycker om att själv fundera ut hur man löser en uppgift	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Jag frågar läraren om hur man löser uppgifter när jag inte vet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Jag gör extra skolarbete för att få beröm av läraren	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Jag gör extra skolarbete för att lära mig mer om saker som intresserar mig	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Jag tycker inte om svåra uppgifter för att de är jobbiga	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Jag tycker om svåra uppgifter för att de är mer intressanta	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

33. Jag tycker om att göra skolarbete på egen hand
34. Jag vill att läraren hjälper mig med skolarbetet
35. Jag arbetar hårt för att få beröm av läraren
36. Jag arbetar hårt för att jag vill lära mig nya saker

Harter, 1981, omgjord 2011 Hoff (Lunds universitet)

***TACK FÖR HJÄLPEN!***

Appendix B: Questionnaire about the collage making task

## *Frågor om teckningen/collaget*

Namn: .....

Klass / lärare: .....

Hur roligt tyckte du att det var att göra collaget?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Tråkigt			Okej		Jättekul	

Hur svårt tyckte du att det var?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Enkelt		Okej		Jättesvårt		

Hur intressant tyckte du att det var?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Inte alls		Okej		Jätteintressant		

Om du skulle berätta för någon annan om vad du gjort här, skulle du säga att du lekte eller skulle du säga att du jobbade?

Jag jobbade       Jag lekte 

***TACK FÖR HJÄLPEN!***



## Appendix C: Instructions to the experiment leader

**Instruktioner till barnen i icke-tävlingsgruppen**

Jag vill att du gör ett collage/teckning som du tycker är lite tokigt eller tramsigt. Använd pappersbitarna och klistret som ni har fått.

Det är bara två saker som jag måste be er om:

- Titta inte på de andra barnen. Jag vill att alla gör sitt eget collage.
- Använd bara de material som jag har gett er. Ni behöver inte använda alla pappersbitarna. Ni kan använda så många, eller så få som ni vill.

Om ni har frågor så får ni räkka upp handen så kommer jag runt och svarar på frågan individuellt (och tyst).

(Visa barnen) Ni kommer att få en klisterburk. Ni kan antingen sätta lim på en pappersbit och klistra denna på det vita pappret eller också kan ni sätta lim på det vita pappret och klistra fast pappersbitarna där ni vill ha dem på detta sätt.

(Visa barnen) Innan ni börjar är det en god idé att sprida ut pappersbitarna i framför er och titta på alla de olika formerna som ni har att välja mellan.

Låt dem hålla på ca 10 minuter och be dem sedan försöka avsluta (ge dem några minuter till). Säg inte tidsbegränsningen om de frågar från början, utan säg att de får hålla på tills de är färdiga.

När de är färdiga: När du är färdig skriv namn på baksidan. På framsidan sätt ett kryss i nedersta vänstra hörnet (försöksledaren kan göra detta om de samlas in en och en). Detta är för att de skall hänga åt rätt håll när de bedöms.

## Instruktioner till barnen i tävlingsgruppen

Jag vill att du gör ett collage/teckning som du tycker är lite tokigt eller tramsigt. Använd pappersbitarna och klistret som ni har fått.

### Alt I: Tävling

Har ni sett alla priser som jag har här på bordet !?

Här finns några riktigt kul saker (visa och beskriv några). Jag vill att ni ska veta att jag kommer att ge några av de här priserna till de barn som gör de "bästa" konstverken. Som ni kan se så är det bara några stycken som kan vinna. När ni är klara med era konstverk kommer jag att bestämma vem som har gjort de bästa....och de barnen kommer att få välja vars ett pris från bordet.

Jag vill alltså att du gör ett collage som du tycker är lite tokig eller tramsig. Använd pappersbitarna och klistret som ni har fått. Det är bara två saker som jag måste be er om:

- Titta inte på de andra barnen. Jag vill att alla gör sitt eget collage.
- Använd bara de material som jag har gett er. Ni behöver inte använda alla pappersbitarna. Ni kan använda så många, eller så få som ni vill.

Om ni har frågor så får ni räkka upp handen så kommer jag runt och svarar på frågan individuellt (och tyst).

(Visa barnen) Ni kommer att få en klisterburk. Ni kan antingen sätta lim på en pappersbit och klistra denna på det vita pappret eller också kan ni sätta lim på det vita pappret och klistra fast pappersbitarna där ni vill ha dem på detta sätt.

(Visa barnen) Innan ni börjar är det en god idé att sprida ut pappersbitarna i framför er och titta på alla de olika formerna som ni har att välja mellan.

Låt dem hålla på ca 10 minuter och be dem sedan försöka avsluta (ge dem några minuter till). Säg inte tidsbegränsningen om de frågar från början, utan säg att de får hålla på tills de är färdiga.

När de är färdiga: När du är färdig skriv namn på baksidan. På framsidan sätt ett kryss i nedersta vänstra hörnet (försöksledaren kan göra detta om de samlas in en och en). Detta är för att de skall hänga åt rätt håll när de bedöms.