

the free mind



vrije Universiteit amsterdam



creativity

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Dear readers,

Another creative year flew by for the Free Mind. A year in which we got to welcome new and creative writers, in which we questioned the essence of a Free Mind for creativity while simultaneously learning that creativity is all around us, a year in which evaluated originality and feasibility at every stage of the process and most of all year that once again created a creative end product.

In this issue you will find many interesting articles that will hopefully bring inspiration for your own creative process. The discussion forum with Bernard Nijstad started off with the challenging statement that we do not need a Free Mind to be creative. However we did need creativity for this Free Mind issue. Every step of the process was inspired by this magical concept, starting with the wonderful cover to the very end of the laughing corner.

This issue brings more than only a summary of creativity, there is again a lot to be enjoyed and learned. The interview with Carsten de Dreu provides you with tips on what the best environment is to brainstorm for research proposals and the help desk gives handy information for those aspiring a career in academic journalism. The topic of creativity invites for some philosophical debate but in true tradition of the Free Mind also for scientific scrutiny. The article on why people are more creative than others provides both. And if you want more, there are articles on creativity as a societal driving force and on the different stages of the creative process.

The Free Mind is both psychology and neuroscience oriented, and we love to highlight this cooperation between the two fields. In this issue you should definitely read the article on preservation of creativity in Alzheimer patients. It is not only very comforting for those of us who just blew out their birthday candles, but also fascinating to discover the power of the mind. Speaking of birthday candles, many of our previous editors and writers have engaged in new endeavors of which you can read all about in the alumni column. This will be my last issue as an editor-in-chief as well. I am passing on the candle to the next creative board.

On behalf of the Free Mind Board,
Andrea Goezinne – Editor-in-Chief



DISCUSSION FORUM

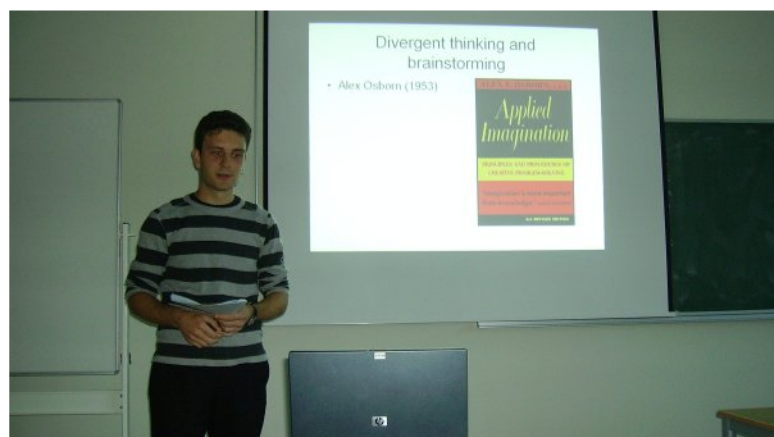
Does Creativity Need a Free Mind?

Introduced by: [Bernard Nijstad](#)

Bernard Nijstad is interested in group processes, group decision making, creativity and innovation, and indecision and decision avoidance. He got his PhD at Utrecht University in 2000, under supervision of Wolfgang Stroebe, Reinhard Wippler, and Hein Lodewijx. The dissertation was called "How the group affects the mind: Effects of communication in idea-generating groups" and was about how people influence each other when they are generating ideas in a group. In 2000 he moved to the University of Amsterdam, where he is currently an associate professor of organizational psychology.

Creativity is important to adapt to changing circumstances, to achieve progress, and to solve non-routine problems. In this talk, I will address two issues. The first is how creativity might best be conceived from a scientific point of view. The second is whether one needs a 'free mind' in order to be creative.

I will argue that creativity needs to be defined in terms of creative products, and not in terms of personality or processes. Products are creative to the extent that they are original and appropriate. Second, I will argue that there are two pathways that may lead to creative products. On the one hand, creativity can be achieved by thinking flexibly and 'out of the box,' by restructuring problems, and by making remote associations. On the other hand, creativity can be achieved through hard work, thinking systematically, and being persistent. I will present evidence from divergent thinking studies to support this dual pathway model of creativity, and argue that creativity does not necessarily need a free mind.



* The discussion forum on the 29th of November by Bernard Nijstad was a success. Unfortunately, due to page restrictions we can only present you with the abstract. We hope to see many visitors at our next discussion forum on motivation. Watch the website for updates on the date and place.



EXPERT INTERVIEW

Carsten de Dreu

Transcribed by: Regina Bode en Andrea Goezinne

Professor De Dreu got his Phd in 1993 at the University of Groningen and has since then managed to create an impressive resume. He has been a post-doctoral Fellow at Royal Netherlands Academy of Sciences and a visiting professor at Yale School of Management and Carnegie Mellon University. Currently, he is the chair of the faculty of Organizational Psychology of the University of Amsterdam and the scientific director of the Kurt Lewin Institute.

But that is not all; he is also the treasurer of the European Association of Experimental Social Psychology and the chair of NWO Theme on Conflict and Security. Last but not least he is an associate Editor of the Personality and Social Psychology Bulletin. And this not even sums up all of his publications and books.

Prof. De Dreu's research interests are in the field of conflict and negotiation, but recently he has turned his gaze towards creativity and innovation processes in the work environment.

“I can do a career outside academics – but that’s no fun.”

The Free Mind:

Where does your interest in creativity and decision making come from?

Carsten de Dreu:

I think there are two reasons; one is that I think that creativity itself is a very interesting phenomenon. If you think about what distinguishes humans from other animals, then it seems to me that one of the key things is that humans can be utterly creative, much more creative than many other animals. The other reason is that I have been doing research on conflict and negotiation for a very long time and I

got a little bit bored with that... I thought, “I can do two things, I can do a career outside academics – but that’s no fun. I needed to find another area.” And creativity and innovation was something I was already working on, but it was always more of a sideline. Therefore I decided to invest more time into that area.

The Free Mind:

What is your definition of creativity?

Carsten de Dreu:

I make a distinction between creative processes and creative outcomes. I would not say a particular

cognitive process is creativity. Creativity is an end state – which is a new insight, product or solution.

The Free Mind:

One of your research outcomes was that thinking aloud makes you less creative. That made us a little worried since in our classes students tend to think aloud a lot.

Carsten de Dreu:

I think it is important to make a distinction between the study that we did and the context in which we found that thinking aloud makes you less creative and a classroom discussion. The critical difference here is that in a classroom discussion you are working in a group. And there is also evidence that if you listen to other people's ideas you get new ideas yourself – things that you haven't thought of before.

At the same time, thinking aloud should reduce creativity. But the net balance between those two is difficult to assess. We know from a lot of brainstorming research that when people brainstorm in group settings the group is less creative than the sum of the same individuals working alone. However, it could very well be that you hear something from a colleague in class and that sits in your mind for a while and after class it comes back to you and makes you more creative.

I would not say on the basis of those results that we should not have thinking out loud class discussions – definitely not. I think it is very useful, also because not all classroom discussion is geared towards becoming more creative. It often times is also oriented towards better understanding.

The Free Mind:

What if the primary goal is to be as creative as possible?

Carsten de Dreu:

I think group research on brainstorming suggests you should work on your own. And our work on thinking out loud further suggests that if you work alone, work in silence – don't start talking out loud.

However, our research also showed that this is particularly true for certain types of individuals, namely, people who are highly concerned about what other people might think of them and especially those people who have difficulties coping with that. People become less creative if they have what we call high fear of invalidity, in other words, if they fear making stupid remarks.

The Free Mind:

We were curious about one of your other findings as well. Apparently, a dissenting minority can actually lead to more creative solution. Could you explain that a bit more in detail?

Carsten de Dreu:

This is a finding that has been reported by many people and we replicated it. The basic idea is that people in general expect other people to agree with them. Now, if you find out that a majority of your peers have a different opinion than you, then this is very threatening. People become concerned that they might be excluded from the majority and become very compliant and conforming in their thinking.

“...work in silence – don't start talking out loud.”

However, if there is a minority that thinks differently from you, this is not so threatening, because it is just a minority. This is where people start to work with different perspectives on the

same issue. They can think openly about it because there is no real threat, which would be the case with a majority opposing you.

Our research found this effect in a study with word associations. We told people who were very much against more immigrants that either a majority or a minority of their fellow students was very much in favor of having more immigrants in the country. And then we asked them to freely associate on the word foreigner. People who had the majority disagreeing with them would say “low income, stupid,...”, all the stereotypes about immigrants would come out and not very original. However, people in this minority condition who read exactly the same message about why more immigrants should be allowed wrote down things like “sun, beach,...”, they were more original, simply in terms of the associations they had.

Important is that we showed that this whole process works not only in the laboratory but also in work teams in organizations and that it not only leads to new ideas but also to the implementation of new ideas. This is very exciting because it really shows how minorities can actually change the way things are done.

The Free Mind:

What is in this case the relation with regulatory focus theory. For example, people in a psychologically safe might be more likely to get into a promotion focus, which would make them more creative than people in an environment that is threatening.

Carsten de Dreu:

I think this is a very interesting hypothesis. I am unaware of research showing this, but it sort of fits with the idea that when the minority becomes a threat for the group’s existence then beneficial influence of the minority disappears.

There is research showing that a minority that is persuasive and causes conflict endangers the continuity of the group as a whole. People then become very concerned about suppressing the minority or maybe even excluding the minority and they are no longer thinking about what the minority has to say.

Now, I am not so sure that in a psychologically safe climate with a minority dissent there will be promotion focus, but I can see that if the minority is really a threat then majority members might end up to be in a prevention focus.

The Free Mind:

In assessment centers people are tested on creativity. Should we test for and select for creativity?

Carsten de Dreu:

There is some evidence that personality - whether it is rooted in your biological make-up or socialization – correlates with creative performance, but I am personally a very strong believer in the power of the situation.

“Creativity can be trained.”

Yes, people who are open to experience, who have high IQ, high cognitive ability are more likely to be creative than those with very low IQ, who cannot see interrelations or who are very close minded. That’s a very general idea. But know you put these very high IQ people and these very open-minded people in situations where they have to work under high time pressure and where they are rewarded for outperforming their colleagues. They won’t be creative. In other words, you can maybe select for creativity on the basis of personality

Expert Interview

variables, but then if you put people into the wrong context it doesn't matter.

Creativity can be trained. So, you have to design your work environment so that creativity really can blossom and perhaps you should have more creative people than rigid, narrow-minded people. On the other hand, we have recently published a study that showed that narrow-minded people, those with a high need for structure, can actually be pretty creative if you give them enough time. Openness to experience relates positively to creativity, but we have just shown that need for cognitive structure also relates to creativity – and those two personality traits are negatively correlated. It's a complex story.

The Free Mind:

But is creativity always a positive thing?

Carsten de Dreu:

I think this a very important area that we know little about, actually. There is this tendency, both in society and in science, to see creativity as a positive thing, even though there is research that actually shows that innovation in the work place leads to a lot of conflict. People have to do different things, they have to learn new computer systems, maybe they get less interesting jobs because of innovations, so that creates envy and misunderstandings.

The Free Mind:

Many results of research stay in the field of social psychology. Can you mention any research that is relevant for multiple disciplines or is interesting for lay people?

Carsten de Dreu:

I am working both in organizational psychology and in social psychology and one of my goals is to sort of move back and forth between these fields of study and use social psychological insights to

better understand what happens in organizations and vice versa

The creativity research is still very new, so I only have a few publications, some papers in progress, and some ideas. In my older research on conflict and negotiation we have tried from time to time to write more accessible Dutch books, or short articles for a broader audience.

I think many of our research findings and theories have very strong applied relevance. And in some cases I try to show that applied relevance through these publications or lectures. But I agree that a lot of our research stays in side and we are communicating only with each other rather than with the outside community. Sometimes it is also a matter of patience. Researchers do not know instantly if their findings indicate is a new law of human behavior or whether it is just a fluke, we don't know if it generalizes to other contexts, we don't know if it can be generalized to other laboratories or other tasks, or other subjects. It may take ten, twenty years of collective research until we finally can say, "Okay, this works under these boundary conditions and therefore in this setting you can apply it, in this setting you can't." And I think only when we have that kind of very firm knowledge we should go out and apply stuff and tell people about it. In that sense, we should also be careful with bringing information into the outside world.

“...knowing a lot about something doesn't mean that you are good in doing something with it.”

The Free Mind:

How does your research influence your personal life or the other way round?

Carsten de Dreu:

I would say the other way round. It is very difficult because to some extent knowing a lot about something doesn't mean that you are good in doing something with it. I know a lot about negotiation and I have been studying it for many years, but it does not mean that I am a very shrewd and effective negotiator. I do have the feeling that because of the research that I do on conflict, negotiation, and on creativity, I am better able to describe what is going on in my personal life. I am better able to say, "You know, when I was negotiating the price of the car I wanted to buy this and this happened." I am able to describe it in kind of process terms and in terms of the theories we work with. However, when I am actually engaged in a negotiation all this knowledge goes out of the window and I am just dealing with this nasty, shrewd seller and I fall for all his tricks and I walk away with a bad car for a much too high price.

In particular with the creativity research I actually do try to apply things that I have learned from the research when designing ongoing research and thinking about questions. I try to think before I design a new study, "Where do I want to be with my research in ten years from now?" rather than, "What am I going to do this Friday?" So I try to have more of a global mindset because we know that this leads to more creative thinking. And maybe that also helps me to be more creative in the studies that I design. Whether it works I don't know – I don't have a control group.

Why are some people more creative than others?

By: Hanneke Hulst

Creativity is a fundamental activity of human information processing resulting in an idea that is not only original but also useful in a particular (social) setting (Sternberg & Lubart, 1999). A famous “creative” is Leonardo da Vinci, who conceptually invented the helicopter and the tank. Another is Albert Einstein, who made huge contributions to several theories in science. In this article I would like to answer the following interesting question: *why are some people more creative than others?*

This question will be answered within the scope of findings from studies done on brain regions involved in creative processes. It is known that to be creative, cognitive abilities are required such as working memory, sustained attention, cognitive flexibility, and judgement of aptness (Damasio 2001). For a long period of time creativity has been associated with psychopathology, most often related to manic or mildly psychotic personality disorders. For example, it is known that mood disorders and artistic creativity are related to each other (Jamison, 1989). However, the neurobiology linking these personality disorders to creativity is still unclear.

Ideas about the origin of creativity are well formulated. Since the 1970s it has been thought that the hemispheric lateralization model gives the best description of the concept creativity. This model emphasizes that the non-dominant hemisphere is specialized for creativity; however, this idea became less popular when later evidence showed that maximizing the function of both hemispheres is probably more important than selectively activating

the right hemisphere (Martindale, 1999). Another finding contradictory to the hemispheric lateralization model is that right or left hemisphere lesions rarely affect creativity selectively; this effect is always clouded by the profound impairment of more general skills (Flaherty, 2005).

A hypothesis that goes against this hemispheric lateralization model is that there are connections between the frontal lobes and temporal lobes that are of a larger importance than those between left and right hemispheres.

The best way to find out about the concept of creativity is to investigate patients with mental disorders that are influencing the brain in such a manner that these patients are more creative than other people. For example, studying patients with hypergraphia, a compulsive drive to write, helped neuroscientists to get more insight into the anatomical correlates of creative drive. Hypergraphia is generally believed to reflect decreased temporal lobe activity and is most common when the lesion is in the right hemisphere. In addition, temporal lobe lesions are most likely lobar lesions that generate mania. Manic hypergraphia and pressured speech reflex underlying idea pressure and loose, cross-modal associations that are, when the manic state is mild enough not to be disabling, significantly associated not only with novel ideas but also with socioeconomic success. It should be realised that hypergraphia is not the only condition that affects the temporal lobe and increases creative drive: temporal lobe epilepsy and frontotemporal dementia are two well known disorders that have the same effect (Flaherty, 2005).

The question remains, is the temporal lobe involved in the whole process of creativity? In fact, it is the other way around. The disorders that trigger creativity are associated with decreased activity of the temporal lobe. So there might be another system involved in the origin of creativity.

Hypergraphia reflects the drive to write, but not always an increase in writing skill. Nevertheless, creative drive can secondarily improve creative skill. On one hand this is due to the effect of practicing; the more people practice writing or painting, the better they get at doing it. On the other hand it is thought that motivation plays a role in this process. The Darwinian model predicts that the subjects generating the best ideas will generally also be the most driven and productive, and that innate skill will be less relevant. This was proved when creativity and intelligence were linked to each other. There is substantial evidence that creativity is essentially independent of I.Q. above 115. Above this threshold, the model predicts that brain motivational systems will be more relevant than networks primarily involved in skill (Flaherty, 2005). Martindale (1999) found that creative subjects have higher baseline levels of arousal and greater response to sensory stimulation, pointing towards a role of the limbic system including the dopaminergic pathways. The limbic system includes the structures within the brain involved in emotion, motivation, and emotional association with memory. This system is highly interconnected with a structure known as the nucleus accumbens. This nucleus accumbens plays an essential role in the 'drive' of humans. There might be a relationship between the limbic system and the temporal lobe at this point. If there is an interaction between the limbic dopamine and the temporal lobe, this might in turn cause novel creative thoughts or novel thoughts that are merely psychotic.

The answer to the question 'why are some people more creative than others?' is not yet clear and there is still little known about brain mechanisms that

form the basis of creative thinking. From research in patients with hypergraphia, we know that there might be a role for the temporal lobes, namely decreased activity in these areas. In addition to this, it was also found that the limbic system plays a role in creativity as well. The limbic system is involved in drive and motivation, both of which are influenced by dopaminergic pathways which are interconnected to the temporal lobes.

In conclusion there is no a recipe for making someone more creative. This is probably an advantage, keeping the real 'creativists' special. Why would we want to have everyone producing original and useful ideas? Maybe we should realize that not everyone has to become a Leonardo da Vinci or an Albert Einstein – having a little bit of creativity is enough to survive.

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EXPERT INTERVIEW

Dianne Tice

Transcribed by: Suzanne van Gils

Dr. Tice's primary interest is in the scientific study of the self, especially the behavioral, motivational, and emotional components of the self. She studies self-control and self-regulation, self-presentation, self-handicapping, self-esteem, the self-concept, and social rejection.

The Free Mind:

Your research concerns the self, how and why did you get interested in this topic?

Tice:

I got interested in the self because I was interested in social psychology, in the overlap between internal cognitive and motivational emotional processes and external social interactions. The self seemed to be pivotal at the interface of the internal sensations and the external world.

The Free Mind:

We have a couple of questions for you related to the topic of the current issue, creativity. The first question is; Do you think that changes in how people behave on various occasions are a matter of self presentation?

Tice:

I think the self is a very big and multifaceted entity. It has many different sides, most of which are consistent, but there are also some inconsistencies. This is true of a lot of mental processes, attitude research shows this is true of our attitudes and that is how we get cognitive dissonance. I think the same thing is true of the self. It's very big and holds a lot of information in it, and some of this information is a bit inconsistent. We can activate different areas of the

self at different times in different social settings or with different primes. This becomes the 'working self'.

“We can activate different areas of the self at different times”

Hazel Marcus spoke of multiple selves, the self in the workplace, the self with the parents, or the self with your friends. This has some legitimacy, but also there are not distinct little entities in there, like little homunculi, the self is much more amorphous than that. For example, most people can think of themselves as shy, you can bring that out and they can think of the shy sides of themselves. A person might make friends easily but can still think of himself as shy because he does not like to speak up in front of a group or be a leader. In contrast, I know professors who do not mind to speak in front of hundreds of people but they don't like to make small talk with strangers or acquaintances. So, we can make people think of themselves as shy, almost all of us have aspects of shyness in us, as well as most of us have the aspect of ourselves as somewhat friendly. Even people who are very shy often have a couple of close friends with whom they are intimate and open and they feel not shy in these situations.

So we have all these different kinds of facets. Different social situations can bring them out. You can think of yourself as competent person, one can feel very competent in a work setting knowing exactly what to do. But then, hand the person a baby and he feels completely incompetent. Personally I like babies but some people do not know what to do and feel confused and nervous and incompetent and want to hand it back. We have this different aspects of ourselves that are just brought out by different social situations.

“You can say 'I want to stop being a procrastinator'.”

The Free Mind:

Are people able to change themselves radically? Is it possible to overcome yourself and become a new person?

Tice:

Self change is difficult and takes a lot of concentrated effort and work. Some self change occurs automatically and developmentally, over a long period of time or, in adolescence, over a very short period of time. People go from being children to being adults and during that time many of things change, their taste changes, their preferences change, their personality changes. One things adolescents feel very strongly is that their social bonds hold them back and don't allow them to change. Adolescents often feel resentful because their parents still see them as incompetent children while they start being able to take care of themselves.

Even in adulthood people gradually change but it slowly occurs, and again sometimes people feel resentful of social bands hold them back. People might have the same friends since college with

whom they used to go out drinking and party and stay up late and now they feel like they have grown beyond that but they feel like their friends are still thinking of them in that way and that they are pressuring them to stay the same. So yes, the self can change, it can change gradually over time and it can also change though concentrated effort but that is difficult. You can say “I want to stop being a procrastinator”. You can figure out how to change and then do it. It is possible but it takes hard work.

The Free Mind:

Related to this, is there a control that you can have over the way you present yourself in different contexts? Some people for example behave radically different when they get together with old friends.

Tice:

It is very well possible to get old parts of the self out, to behave like an adolescent when you get together again with your friends from high school, as long as that part of the self still belongs to the ideal self, where Caryl Rusbult talks about. If the person sees this playful adolescent part of himself no longer as a part of his ideal self, he will probably not engage in the behavior anymore or not want to even be with the people anymore. This could be because this behavior will not move him in the direction of his ideal self. I think Caryl's work has a tremendous impact on views of the self and how the self changes with other people. In the light of the Michelangelo phenomenon, if you would want to be more creative it would be a good thing to be around someone who sees you as creative and that will help you to bring out that creativity in you.

The Free Mind:

Is there a role for creativity in this process of finding out how one could succeed in changing the self?

Tice:

The extent in which you can look at a problem from multiple angles is essential. Unless you were able to hit it right the first time and managed to change yourself, one approach might not work for you, you might want to try something else. Being able to just picture a problem differently is essential. Creativity is a very extensive concept, it depends on how people see themselves, some people might see themselves as highly creative in their jobs because they are able to look at problems from multiple angles. Other people with the same skills may not see themselves as being creative because they are not artistic or musical. Many people associate creativity with some kind of artistic talent. However, as psychologists we define creativity much more broadly than just through the arts. Even if you are not a good actor or painter you can still be highly creative in your approach to child rearing or your approach at work.

“There are some kinds of creativity that seem to just hit people”

The Free Mind:

There's an upraise in computer programs where people create a digital version of themselves, an avatar. Do you think a person's personality restricts the choices one could make during the creation of these avatars?

Tice:

This is probably especially true if you have an avatar which you are going to use over a long period of time. For a short term game people are more likely to pick something that is totally unlike themselves, just for the fun of it. However, this is not your usual approach. So if you are going to play the game over months and keep the same persona, it is difficult for many people to keep it

up. The only people who seem to be able to keep it up are people who have this strong persona in themselves but they are just not in a situation where it is not expressed. For example in their work it might not be approved to take risks or in their personal life their parents may have been risk averse. The person chooses this as a persona for a game and play it out and expresses it that way. But more often people pick personas that have at least a strong reflection of their own personality. If you really are a risk averse person in real life then it is hard to do this even with you long term persona in the videogames too, one might think “what if I lose all the wealth I built up during these long hours of playing”. For a one day game it might not be important because you can just recreate the avatar, but over the long term you are likely to see a person's personality back in the avatar.

The Free Mind:

It is funny that people are risk averse even though real consequences are absent.

Tice:

It's funny that people attach value to these things that exist only in video games, and there is no real money involved. Although in some of the games people have now begun to sell things for real money on the internet, so in some of the games the attributes actually do have real value. But even in the absence of real value, people start to attach value to their e-house and their e-furniture. Maybe the reason for this is that they put hours of work on the computer, which is actually playing the game, to be able to buy this e-house and e-furniture. They treat it like it's real, which is sort of the point of the game.

The Free Mind:

How do you see creativity in terms of the ego-depletion research?

Tice:

Because there are many different definitions of creativity, there would be different answers to that. There are some kinds of creativity that seem to just hit people, so in a flash or a moment you can have a really good idea. I think that is not depleting. Say you're a songwriter and during breakfast the beginnings of a song come to you and you sit down at the piano and start creating it. That experience is much more like Csikszentmihályi's view of the 'flow' experience. I'm often asked whether our findings on ego-depletion are not similar to Csikszentmihályi's findings of 'flow'. A lot of this depends on whether things are going well and whether it is taking effort to continue. For Csikszentmihályi it is not taking so much effort, when you are really in the flow it is moving you along instead of you forcing it to move along. But there are other times when being creative is hard work. There might be a little bit of an idea, maybe an idea of a song, and then it might take you a long time to finish it. You might have a flash of insight, but a lot of creativity is making yourself continue to work at the issue and approach it from different angles. Painters sometimes paint over what they have done, we can even see this when we x-ray old paintings. It's not just that they had this creative insight and painted the whole painting. For example, Van Gogh spent almost a year studying to paint the potato eaters to make the faces express the earthiness he wanted. That kind of effort, where you have to make yourself keep doing it, that might be somewhat depleting. So sometimes when you are just in the flow, being creative does not have to be depleting. Other times to be creative when you have just a gist of an idea and to make yourself keep working on it, that might be depleting. I think a lot of creative people will recognize both those different aspects of creativity. When I write a paper sometimes I just know what to say for about one paragraph but the rest of the paper can be a lot of work.

I remember when I had the idea for the ego-depletion research, the cookies and radishes study. We were having a class and we were thinking on how we could measure ego-depletion in the laboratory, before we started any experiment on ego-depletion at all. I realized that being on a diet is depleting and that we could make people hungry and then have them in the presence of tempting food versus presenting them with some food that was not as hard to resist. So I had this flash of inspiration which was quick and easy but then for years I had to run the experiments one subject after another and that might be ego-depleting.

“sometimes you wonder why a creative person has bad ideas”

The Free Mind:

In hindsight you might be able to integrate everything that you have done up until that point. I wonder whether you could say that expanding your knowledge structure is the part that takes the effort and is depleting, whereas the meta-perspective level insights that appear after gaining all the knowledge are the easy part.

Tice:

I think that is one way that it can happen. Also, sometimes the insight can be just a germ of an idea, which then takes a whole lot of work to continue. Roy found this with his book on the cultural animal. He wrote a whole book on human nature and rewrote it and had it finished and sent off. And then, when he was thinking about it he had the creative insight that what nature evolved us for was for culture. This changed the whole thing and this is the meta perspective you are talking about. He had all of the knowledge structure there and he had the germ of the idea. But then it took a whole lot more work to rewrite

the whole book and to change the structure of the chapters. Sometimes the germ of the idea can be very early, sometimes it can be very late. But it takes a lot of hard work other than that. Many people would like to be a rock star because they think that being a rock star is not that hard, all you have to do is to think of an idea of a song and it will be good. But, how shall I put this, sometimes you wonder why a creative person has bad ideas. Why don't they make only good songs instead of also the dumb ones that no one listens to? The reason for that is you can't just always write a good song. It takes a lot of work and time to write many songs until one of your songs is really great. But you can not just write that one without writing all the other ones that somehow change you and change your knowledge structure and your abilities so that then you can write a good one. In terms of paintings, what you don't see in the museums is that there are lots and lots of other paintings that were painted over because they were not so good. So a creative person can not just have great ideas all the time, he has to have a lot of ideas that do not work. Some people are very perfectionistic and they can not accept bad ideas. It is harder for such a kind of person to be more creative. A stereotype of creative persons in any kind of endeavor is that they are more sloppy than others. Often it is not that this person is more sloppy, it is just that he's more willing to accept bad ideas along the way, because you need them to come to creative ideas. Some of us also never get to the creative ideas as well, we keep trying and trying but keep on producing mediocre ideas. But without these mediocre ones even the great people can not produce the great ideas.

The Free Mind:

Do you think that all people can be creative if they work hard enough?

Tice:

I doubt that all people have exactly the same ability

for creativity in them. Just like we do not all have the same ability for mathematics or physical skills. There's just variation among people, and I would guess that some people have more innate ability to be creative. But I think just like almost anybody can do math, almost anybody can be creative to some extent. Almost nobody can be super creative without the hard work and I think that with hard work almost anybody can be somewhat creative. Of course people can be creative in different domains. Part of it is also finding the domain in which you can be creative.

“a creative person can not just have great ideas all the time”

The Free Mind:

Would it be accurate to say that striving for creativity is a form of self-actualization?

Tice:

Yes you could. No matter how creative you are, striving is what is most important, you need to keep trying. The more you try, the more you will also have inspiration just come to you. But it takes that effort of trying as well.

The Free Mind:

In the new Psychological Review there was this article on the modularity of the self. Based on this I was wondering why the self concept seems to be presented as a unified whole?

Tice:

I don't think it is as unified a whole because it can contain contradictory information. You can present yourself in different ways to different people, and those are all components of the self. I think this theory is in response to the idea of there being multiple selves, that there would be all these discrete little entities within the self. That

there would be one self for every situation. I think that is also not true, the self is much more unified than that. There are just facets that you bring to light or facets that are primed or brought out by the social situation. It's not like there are all these discrete little homunculi running around inside your self but instead it is more unified than that. But the self can still hold contradictory information or information that is not brought into the working self at any given time.

The Free Mind:

At the end of the interview we always ask the person we interview to tell us something about his or her current research. Would you like to tell us something about your current research?

Tice:

Currently I have been looking at what gets depleted in ego-depletion and what we can do to replenish the depletion. We have looked at glucose and food and also at rest. We have started to look physiologically at the mind-body problem. Many people have started approaching the mind-body problem with fMRI, looking what area of the brain “lights up” under certain circumstances. We think there are some things that are being ignored this way, things that are going on in the interaction between the brain and the self, for example the way in which hormones affect the self. Many of these processes are regulated by the brain, but there is much more to it than just what area of the brain is causing the effect. We are also looking at humility and how it can affect behavior. We look at how being humble and feeling humble affects the self. A lot of work on humility in the past has looked at trait differences, but we are looking at how we can induce humility in the laboratory and how it will affect behavior.

“self-esteem is not so important, it feels good, but it does not have as much impact as self-control”

The Free Mind:

The last question we have for you is; how does your research affect your personal life?

Tice:

I think that knowing more about self control has made me watch that in myself and see when am I exercising self-control, when am I losing self-control, why am I losing self-control. The self-control work is very easy to apply to oneself. In child rearing we start to see how important it is to teach self-control. In many school systems throughout North America and to a lesser extent in European school systems there is an emphasis on creating self-esteem in children. We start to see from our own research that self-esteem is not so important, it feels good, but it does not have as much impact as self-control. Self-control seems to have a much stronger impact on whether people will be successful. Even in picking graduate students, everybody who applies to our graduate program is smart, what makes some of them do better than others is that some of them are able to make themselves work harder. That is something I look for when picking graduate students.

The Free Mind:

Thank you very much for this interview.

Tice:

Well thank you, it was nice talking to you.

Creativity is preserved in Alzheimer's disease patients

By: Jitske Tiemensma & Marise Kasteleyn

Dementia is a hot topic in today's research. The most prevalent form of dementia is Alzheimer's disease (AD). Approximately 24 million people suffer from dementia, in which the majority (60%) is due to Alzheimer's disease. AD is associated with the formation of neuritic amyloid plaques and neurofibrillary tangles. The cortex shrinks (atrophy) up to one-third of its volume. Some structures are spared, like the primary sensory and motor areas. The posterior parietal areas, inferior temporal cortex, and limbic cortex are most affected. The best known features of Alzheimer are cognitive deficits like memory loss and problems with concentration. (Kolb, & Whishaw, 2003).

Creativity can be seen as a cognitive capability. Therefore, it is expected that it is damaged in cognitive impaired patient with AD. However, research shows that creativity can persist in patients with AD.

A case study of an artist diagnosed with AD and with progressive cognitive impairment demonstrates that creativity is persevered until very late in the course of the disease (Fornazzari, 2005). Fornazzi describes the abilities of the patient, Ms Chambers. Ms Chambers' cognitive capabilities were severely impaired. She had agnosia for common household objects, apraxia, disorientation and problems with memory. In spite of these cognitive difficulties, her painting

creativity remained preserved. She was able to paint portraits quite adequately until 8 months prior to her institutionalization. A possible explanation for this perceived painting creativity is that the most posterior visuospatial functions are relatively intact compared to more anterior and middle-temporal parietal impairment (Fornazzari et al., 2006). Another example of preserved creativity in a patient with AD is Picasso. Even though he was suffering from AD, he could still produce outstanding paintings (Kandell, Schwartz, & Jessell, 2000).

“creativity is persevered until very late in the course of the disease”

Another case study shows that musical memory also persists in patients with AD (Fornazzari et al., 2006). Fornazzari and others showed that a violinist with moderate AD could learn new musical material. They also showed that a patient with AD could recall a new composition. The preservation of these musical abilities may be due to intact brain regions, such as intact perihippocampal cortical systems, controlling basic language, praxis, attention and visuospatial functions.

It is thought that the brain of highly creative individuals differs from the brain of low to

moderately creative individuals. An EEG study showed that EEG differences exist between high and low creative individuals during creative task performance (Martindale, 1978; as described in Chávez-Eakle et al, 2007). Furthermore, a SPECT study by Chávez-Eakle et al. (2007) shows that participants with high creativity performance showed greater right and left prefrontal activation, the left temporal lobe and right cerebellum showed higher cerebral blood flow. These structures are thought to be involved in cognition, emotion, working memory and novelty responses.

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ONGOING RESEARCH

Broadening the Scope on Creativity Research. Integrative Approach of Creative Performance

A talk by Eric Rietzschel

“Creativity is everywhere. I am not just talking about the really creative, brilliant and extremely gifted people in arts and science that have changed our world. The results of creativity are all around you, I think nothing that you see here could have existed without some form of creative behavior, without someone deciding that something should be done different than before.”

This is how Eric Rietzschel introduced the topic of creativity, a very mystical introduction to a lecture about complex sequences of behavior. Creativity is a topic that for many, is as interesting as it is illusive and most would prefer to keep it that way. They say, real creative performance can be almost magical and thus should not be examined. However, Eric Rietzschel lets the rabbit out of the hat in his talk and does the unthinkable. He not only presents the systematic study of creativity, he also argues for a more analytical approach of all stages of creative behavior.

Start studying because you have nothing better to do

Rietzschel claims that he did not start studying creativity because he had nothing better to do. What makes someone creative and more importantly for the academic study, how you measure creativity are important questions that need to be answered. Research on creativity until now has mainly emphasized the link with performance and productivity. Performance is

multidimensional, it changes over time and in order to assess it properly one has to measure outcomes of many different tasks and decisions. Creativity until now, however, has been treated as a unitary construct, for example the number of ideas someone creates. This is important but not the only aspect.

Eric Rietzschel therefore argues that the research so far has been over- as well as under-analytical. Productivity is not the only aspect of creative performance, but we should also not lump together different sorts of behavior. Creativity should be approached as a complex sequence of behaviors and what affects one stage of the creative process does not necessarily affect other stages in the same way. The models proposed so far acknowledge that creativity can occur on different levels, such as individuals vs. groups, but they are based on a single facet assumption and do not specify which stage of the creative process they are predicting.

Eric Rietzschel proposes a multi facet model. He argues that what affects one stage of behavior, such as generation of ideas, does not necessarily affect other stages, such as selection of those ideas. According to Eric, creativity is not something you do at one moment and then it stops. It develops over time. The how-to on being creative according to Rietzschel can be broken

into three parts.

“The first thing you want to do is to define your problem. Given a particular problem definition you generate ideas and after that you’re going to have to make a selection of ideas.”

Now the big question of the day is are these stages affected by each other in a meaningful way?

The more, the merrier?

Brainstorming is generating as many ideas as possible, and it is also the main way in which creative behavior has been studied. The thought behind brainstorming is that it removes people’s inhibitions to mention ideas and hence they are more productive. Brainstorming is thus based on the assumption that quantity leads to quality. Unfortunately, the definition of creativity is that something should be both original and useful and that turns out to be rather tricky.

In a study on creativity by Rietzschel, participants were asked to come up with new ideas to improve the educational system in the psychology faculty. If it indeed helps to have a lot of ideas, people who generate the most ideas should eventually select the best ideas. The correlation however was almost zero, they did perform better than chance. People tended to focus very much on ideas they found important, instead of worrying about if they were creative or not.

Hence, Rietzschel and his research partner decided to be a little bit more creative by manipulating the breath of the topic and the instructions the participants received. The research confirmed the hypothesis of different effects on different stages, but even more interestingly it turns out that if you instruct people to be creative, they indeed select more creative ideas. It has an unfortunate side effect though. Those people who were instructed

to be creative were less satisfied with their ideas. After all, nobody likes to be forced to use a quality criterion that they would not have used themselves.

All for fun

Therefore the next experiment included not only creativity but also a little bit of fun. According to Rietzschel, experiments should not only be fun for the participants but for the researcher as well, a very important aspect that tends to be overlooked. In this experiment students had to create a poster and a slogan for a fictional product. Moreover, they could do this in a dyad with a friend or a stranger. All this fun however created unexpected results- dyad of friends performed the worst, although according to the literature they should perform optimal because they are in a safe environment to express ideas. The current explanation for this result is that the befriended dyads had too much fun.

Rietzschel did not entirely remove the magic out of creativity, he ends his talk with three wishes. He makes an appeal to any fairy or genies in the room. His wishes are more research on the process, on what is happening instead of what is coming out. More theories on how people select ideas and how they define problems. And last but not least more research on organizations, since that is where the research could be applied and will be practically relevant.

And as if this did not require substantial amounts of magic already, Rietzschel also gave us a piece of homework for the rest of our life, which I would like to pass on to you. If someone claims that something is good or bad for creativity immediately ask what they actually mean and what it means for you. After all, you do not want to ruin the magic.

ON THE NEWS

Why creative men are so hot

By: Andrea Goezinne

What do women want? I am sure it is a question that many of you guys out there have pondered over for hours. And since most scientists are not completely insensitive to the other sex, so have they. One of the most interesting paradoxes in mate preferences has recently been reaffirmed by a poll among 2200 highly educated women, the type of men they prefer most was *the artist*, or in other words, the creative man. What is it that makes an artist attractive? They are certainly not known for their dependable nature, or muscular body and usually do not make a lot of money. Probably many men who have spent years in the gym or obtained responsible well-earning jobs in order to get in favour with the ladies are banging their heads to the wall by now.

“the 'good genes' vs 'good dad' hypothesis”

Luckily for those fellows not all hope is lost. A recent article in the *Journal of Personality and Social psychology*¹ pondered over the question what women want and suggested that women's mate preferences change across the ovulatory cycle. This hypothesis is not entirely new, since most research on mate preferences is based on evolutionary theory, a lot of attention has been given to the biological background. A very broad

generalization is that men go for looks and women for resources, since they need think of possible offspring and men do not. However, a new line of research suggests that mate preferences of women are not as stable as was thought before. Apparently, when women are fertile they look for different things in men than when they are not. Not only do these findings shed a whole new light on the interest value of those “cramps” stories for men, it also highlights an interesting paradox.

Based on these findings several scientists suggested the “good genes” vs “good dad” hypothesis. In other words, when a woman is fertile she will look for fitness indicators of good genes that the possible ‘dad’ candidate will pass on to his offspring. According to the theory when women are less fertile they look for benefits that are more immediately accessible than genes. The paradox is that resources are also important for the welfare of the child in the future (“good dad”), so why prefer good genes? Moreover, the poll mentioned in the introduction did not only find that women prefer artists, it also showed that these women do not like men who are poor. Then what is that attracts women to creative men?

A study by Haselton and Miller² demonstrated that women's preferences for particular kind of men change during their menstrual cycle. When women are fertile they prefer creative over rich men while when they are not, it is the other way

around. They suggested that creativity is a fitness indicator for good genes, but only for short term preferences.

“Bill Gates and Steven Jobs as examples, not exactly the hottest men you would say.”

Why is creativity an indicator of good genes? Popular culture has profiled the artist. In a book³ on creative men who changed the world, the author, Gene Landrum mentions characteristic traits, such as autocratic, charismatic, driven and intuitive. Are these the character traits that attract the ladies? The author, mentions Bill Gates and Steven Jobs as examples, not exactly the hottest men you would say.

Evidently, our ovulatory cycle does not always have the last say in matters of mate choice. But if it only determines a part of the choice then what else makes an artist attractive? Several, less scientifically supported theories have been put forward. An artist usually has differing world views and knows how to articulate them very well. Differing world views do not have to be attractive,

but they do signal a personality that is innovative. New experiences are exciting and arousing. Moreover, people that are good at something are in general found attractive. They show devotion and passion towards the arts (and thus hopefully towards you as well). Women do not like lazy men, to be good at something is sexy. Unfortunately, men (as well as women) often show different personalities when they are working than when they are at home. The idea that the passion for his work might translate into passion for you could easily be a creative illusion.

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ON CREATIVITY

Creativity as a societal driving force

By: Evert-Jan van Doorn

Before I start on this invited contribution to the Free Mind, I as a writer would like to ask you, the reader, to take a moment to put aside your beliefs about a proper psychology article. I suspect this can be difficult, as the literature on which careers are built must be read critically indeed, and habits are easy to form but hard to break. In this article, which is written from the perspective of an interested layperson rather than from that of an absolute authority, no claims are made and no findings are presented. What therefore remains is the question whether you like or dislike the ideas put forth here, and for those of you who know me personally, whether you like or dislike the writer. In this article, I present you with my perspective on one way in which creativity makes a difference in the development of society. It is likely to be one of many, and may not be especially relevant to social psychologists. Even if this article does not inspire anyone to do ground-breaking research, it may be entertaining in its own right.

Evolution gave members of the human race the ability to think for themselves. As Baumeister (2005) argues in his book *"The Cultural Animal"*, the recent evolution of the human race has been related to and in part dictated by the development of human culture and the social structures that have accompanied it. Our society and the way in which it is structured are the joint outcomes of evolution and cultural development. However, when one takes into consideration advancements in medical science, the role of evolution as a

mechanism of natural selection for the human race seems played out. It looks like the principal player in human development has become cultural development.

"Let's not get carried away here" you may say, "you promised to talk to us about creativity". I am sorry to inform the inquisitive readers amongst you that in this paper, creativity will be discussed at the end. This is not because it is not interesting or because it is of trivial relevance, but rather because it is the grease in the wheels of the machine, so to speak. In other words, it is the binding factor in my argument. This argument consists of three parts. The first is that social development can only occur when new ideas are accepted by society as a whole. The second is that there is a process of modernization at work which has steered societal development. The third is that one specific form of modernization, the mastery of nature, has led human society to be centered around technological advancement, leading to a specific role for creativity in modern societal development.

The Acceptance of Ideas.

When someone has a brilliant idea, it takes time for this idea to become influential. The reason for this is that an idea, in order to be influential, must be accepted as common knowledge by a majority of all people. This sounds like an easy thing to accomplish, as people can simply tell one another

¹ In their 1997 book, which will be mentioned later on in the article, Van Der Loo and Van Reijen argue that one of the component processes in modernization is domestication, which involves the

'taming of nature' as they put it. They see this process as humanity gaining control over natural limitations such as death, which I consider analogous to natural selection no longer applying to humans.

about something. Usually however, an idea will not be accepted right away, it runs into opposition which slows its rate of acceptance. Especially ideas of a large magnitude are likely to invoke resistance of an equally large magnitude. Examples are plentiful throughout history. Some of the better known ones are the idea that the world is round and the law of gravity. More recent examples include the idea of climate change and the idea that we as humans are related to apes.

So what gives an idea a good starting position to compete with other emerging ideas? One characteristic which seems relevant is an idea's applicability to current societal issues. After all, if an idea provides the solution to a well-known and widely spread problem, there are more people who are potentially benefited by it, and therefore the idea will spread through various societal levels more rapidly. Now that we have identified a major inhibitor of societal development (the time it takes for an idea to become accepted) and a possible way to sidestep this process (having an idea with assimilative value), let's look at these ideas in a developmental context - the process of modernization.

Modernization and technological development.

Modernization is a concept that is difficult to delineate. Two Dutch sociologists, Van Der Loo and Van Reijen (1997) devoted a book to the concept of modernization, in which they define it as

"...a complex of cohesive structural, cultural, psychical and physical changes which has crystallized itself in the last centuries and as such has shaped the world in which we live, and continues to push our world in a certain direction."

*Van Der Loo & Van Reijen, 1997,
p. 14; translated from Dutch.*

The authors go on to specify four major developmental currents which can be distinguished in the modernization process. Based on work by Talcott Parsons (1966; 1971), they argue that social reality and human action can be approached from four angles: structure, culture, person and nature, in which change is governed by the processes of differentiation, rationalization, individualization and domestication, respectively. For the current illustration, the most important of these four areas is that of domestication, the way in which the human race has increased its control over nature.

Domestication is characterized by increasing efforts of humanity as a whole to gain control over natural forces. Whether the problem is control over ageing, birth deficiencies, the weather or global warming, these are all examples of humanity trying to stop a naturally occurring process. Van Der Loo and Van Reijen argue that the main way in which mankind gains control over nature and thereby generally demystifies the world, is through technology. Since the invention of man-made fire, our species has been able to use technology to increase its fitness, making the capacity for technology a remarkably adaptive trait. After all, when you control the environment you are in, you can make it responsive to your survival needs and thereby ensure a rapid growth of your species.

On the spread of ideas and the role of creativity

If technological advancement is adaptive in the sense that it has enabled us as a species to create more favourable conditions for ourselves to survive in, it is likely that it has been selected for at a cultural level, being passed on from generation to generation. We can see how society has started to revolve around the development of technological ideas in the continuous expansion

and improvement of our existing technologies, as well as in the swift assimilation of highly applicable ideas into society.

“Creativity is a potent and useful force in shaping society”

It is here that creativity exerts its influence. As new technologies yield new solutions to societal demands, new demands will invariably arise. With our increase in knowledge of medical science, traditional natural evolution has all but become irrelevant for some groups of humans, with modern, Westernized societies being almost unaffected by natural selection processes. In contrast, the bias that society has towards ideas which are readily applicable has ensured that cultural selection has been and still is becoming increasingly important. One example is the availability of resources to cultural groups and the rules and formation of rules governing such availability.

As such, the process of technological innovation and the associated scientific conduct of gaining knowledge and understanding, is a self-perpetuating cycle which is no longer concerned with domestication for the sake of increasing our fitness in natural selection. Creativity has always been crucial in allowing humanity to find solutions to the various challenges natural selection has posed, because it has enabled people to apply and extend technology in ways that allowed control of the natural selection process. However, creativity currently serves as a way to facilitate cultural selection rather than inhibit natural selection, mostly by allowing us to confront societal issues. In this context of problem confrontation, creativity often implies the presence of a goal, or rather, a problem to be solved. Thus, using creativity poses a risk; if we are only creative in

response to the cultural-evolutionary issues that we face, the direction we take is shaped by our problems and the way we choose to solve them rather than by how we feel our culture should be shaped. This seems like a nice point to end this short essay with. Creativity is a potent and useful force in shaping society, but we should be aware that it is subject to the options for cultural evolution which the problems we encounter offer us. Great ideas can also be found by looking beyond these problems and adopting a long-term strategy for cultural evolution.

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PAPER OF THE TERM

Motivation, Inspiration, and Creativity

By: Marieke Roskes

“His personality has suggested to me an entirely new manner in art, an entirely new mode of style. I see things differently, I think of them differently. I can now recreate life in a way that was hidden from me before.”

- Oscar Wilde¹

What makes a great artist? Just doing what everybody else is doing clearly is not enough. The greatest artists are the ones that come up with new ideas or styles. What makes a great scientist in psychology? An outstanding scientist differentiates from others by having powerful new ideas for research and theory (Sternberg & Lubart, 1996). Creativity is valued greatly in present-day society, yet it is very subjective. Creativity is defined as the ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e., useful, valuable) (e.g. Amabile, 1990; Griskevicius et al., 2006; Sternberg & Lubart, 1991). Because of the subjective nature of creativity, it is difficult to measure. This, however, does not reduce the importance of creativity. Although it may be difficult to operationalize, most people agree that there is something as ‘creativity’. People even agree to a very high degree on what is creative and what is not (Amabile, 1990; Griskevicius et al., 2006).

Griskevicius et al. (2006) argue that creativity has always been important to humans. Evolutionary, creative people were more likely to reproduce, because of both natural and sexual selection. Natural selection occurs when a trait enhances the probability of survival. For example, creative people who came up with new ways to catch animals or new ways to improve huts may have

had increased probability of survival. Sexual selection occurs through preferences that people have towards a partner. If creativity enhanced survival, it would be an attractive quality in a partner. Anyhow, whether it is a result of either natural or sexual selection, people are attracted to others who show creativity (Griskevicius et al., 2006; Li, Bailey, Kenrick, & Linsenmeier, 2002).

“Just doing what everybody else is doing clearly is not enough.”

Because creativity is considered attractive in a partner, Griskevicius et al. (2006) propose that evolutionary relevant romantic cues (such as the proximity of an attractive person) may facilitate creative behaviour, in order to attract the attractive person. In their studies they find that romantic motives under certain circumstances stimulate people to display more creative behaviour. Griskevicius et al. claim that this result cannot be accounted for by motivation. However, no distinction is made between intrinsic and extrinsic motivation. In the present paper I propose that it is likely that the results of Griskevicius et al. can be accounted for by motivation; more specifically by intrinsic motivation.

In the following I will give an overview of the studies conducted by Griskevicius et al. I will discuss the effects of extrinsic and intrinsic motivation on creative behaviour, and explain how inspiration is connected to intrinsic motivation. I

will explain why the interpretation of the findings of Griskevicius et al. should be reconsidered. I will finish with conclusions about the role of motivation in the findings of Griskevicius et al., and discuss some more general matters on creativity.

The Effect of Romantic Cues on Creative Behaviour

Griskevicius et al. investigated the effect of romantic cues on creative behaviour. Participants in four studies were assessed on their baseline creativity level (participants were not aware that creativity was measured). After this, the participants read a story about an attractive person of the opposite sex. The participants were asked to imagine they were dating this person, and were engaged in either a short-term relationship, in a potential long-term relationship, or in a stable long-term relationship. Participants in the control condition imagined going to a concert with a same-sex friend. After reading the story, creativity was assessed again.

“Any romantic cue increased creativity in males”

Any romantic cue increased creativity in males, whereas only a high quality, long-term partner increased creativity in females. This gender difference may originate from evolutionary differences in parental investment (the time and energy invested in offspring). Women typically invest more time and energy in offspring than men.

Mood and arousal are controlled for, and cannot explain the findings. According to Griskevicius et al. the findings can also not be explained by heightened motivation. This assumption is based

on two arguments. The first is that participants who imagined going on a date did not spend more time or words on the stories they wrote to assess creativity, than participants who imagined going to a concert. The second is, that participants who were motivated by a monetary reward to do the best they could did not show more creativity (but did report higher motivation than participants in the other conditions). The findings of Griskevicius et al. suggest that *extrinsic* motivation (i.e. monetary reward) cannot explain the relation between romantic cues and creativity. In the following I will explain why it is plausible that their results can be explained by *intrinsic* motivation.

Extrinsic versus intrinsic motivation.

People rarely do truly creative work unless they really love what they are doing, and focus on the work rather than the potential rewards (Amabile, 1990; Sternberg, 2006). Extrinsically motivated people do an activity to receive an extrinsic reward (Deci, Koestner & Ryan, 2001). Expected evaluation, reward or competition are examples of extrinsic motivators, and provide an external locus of causality (Deci et al., 2001). Extrinsic rewards can lead to an ‘overjustification effect’ (Amabile, 1990). People conclude (unconsciously) that they are not doing a task because it is useful or they like doing it (intrinsic), but just in order to get the reward (extrinsic). This way, extrinsic rewards undermine intrinsic motivation. Extrinsic rewards can lead to intensified efforts (Sternberg & Lubart, 1991; Griskevicius et al. 2006), but this does not always lead to better performance. Contrary, extrinsic motivation can inhibit creativity (Amabile, 1990; Deci et al., 2001)! Not all rewards decrease intrinsic motivation, when a reward provides positive information about the own competence, it increases intrinsic motivation (Cameron, 2001).

Intrinsically motivated people do an activity for its own sake, because it is interesting, enjoyable or satisfying (Deci, Koestner & Ryan, 2001). A powerful intrinsic reward can be achievement of one's potential (Amabile, 1990; Eisenberger & Rhoades, 2001; Sternberg & Lubart, 1991). Intrinsically motivated people look beyond information from the senses and look at the big picture (Sternberg & Lubart, 1991). This may be one of the reasons that intrinsic motivation is related to creative behaviour (Amabile, 1990, 2001; Eisenberger & Rhoades, 2001), because the most striking levels of creativity are often associated with a preference for large, broad problems, instead of narrower, detailed aspects of problems (Sternberg & Lubart, 1991). Moreover, intrinsic motivation usually leads to task orientation, instead of goal orientation (Deci et al., 2001). This may increase creativity, because when focusing on a task there are many possible outcomes, whereas when focusing on a desired goal or outcome, diversity in outcomes is less likely.

“Contrary, extrinsic motivation can inhibit creativity”

Intrinsic motivation plays an important role in stimulating creative behaviour (Amabile, 1990, 2001; Eisenberger & Rhoades, 2001). Intrinsic motivation can directly increase creative behaviour, but can also influence creativity indirectly, because skills determine what a person *can* do, motivation determines what a person *will* do (Amabile, 2001). Because intrinsic motivation seems to play such an important role in stimulating creative behaviour, the possibility that intrinsic motivation mediates the effect that Griskevicius et al. (2006) found of romantic cues on creative behaviour, should not be brushed aside too hastily. By showing that a monetary reward does not increase creative behaviour, Griskevicius et al. replicated the finding

that extrinsic motivation typically does not increase creative behaviour. In the following I propose that the effect of romantic cues on creativity can be explained by intrinsic motivation, because romantic cues may have triggered intrinsic motivation through inspiration.

Inspiration.

Inspiration implies motivation that is triggered by something or someone (Lockwood & Kunda, 1997). Inspiration correlates positively with intrinsic motivation, but negatively with extrinsic motivation (Thrash & Elliot, 2003) and is a state that is evoked rather than an act of will. It is an involuntary process which causes energization, motivation and transcendence of the ordinary limitations (Thrash & Elliot, 2003). In the studies of Griskevicius et al. motivation to attract an attractive potential partner was triggered by imagining dating an attractive person. The increased motivation may have resulted in the increased display of creative behaviour, because creativity generally is considered attractive in a partner (Griskevicius et al., 2006; Li, Bailey, Kenrick, & Linsenmeier, 2002). The idea that attractive persons can trigger inspiration is not new. The Muses in Greek mythology already were the personification of this idea, over 2000 years ago. The Muses are goddesses, who protect the arts and sciences, and inspire those who excel at them. Through the years many poets, composers, and other artists have been inspired by persons. It is likely that in the studies of Griskevicius et al. the attractive persons raised intrinsic motivation in participants to perform well on the creativity assessment, through inspiration.

Discussion

The importance of intrinsic motivation in the process of creativity is inevitable. Although the relation between inspiration and creativity seems

obvious, no research so far is done into the exact way that inspiration, motivation and creativity relate to each other. Also, not much research is done into social factors that play a role in creative behaviour. Griskevicius et al. (2006) studied the effects of (potential) romantic partners on creative behaviour, and thereby make an interesting contribution to knowledge about social factors that influence creativity. However, their conclusion that the effect of romantic cues on creativity cannot be explained by motivation is not very convincing. It may not be explained by *extrinsic* motivation, but it is likely that it can be explained by *intrinsic* motivation.

Initially research on creativity mainly focused on creativity as a stable person characteristic (Baer & Oldham, 2006; Sternberg, 2006). The idea was that people were either born talented, or not. Soon this idea was expanded with the notion that creative ability can be enhanced through hard work (Amabile, 2001; Sternberg & Lubart, 1991, 1996). The most recent research does extend this, by identifying social factors that can undermine or enhance any person's creativity, no matter what that person's baseline level of creativity is. So far, not many publications exist on social factors that influence creativity. Griskevicius et al. (2006) are one of the first dedicating noteworthy attention to social factors, in the form of romantic cues. Future research should concentrate on unravelling the role of intrinsic motivation in this process, but whether intrinsic motivation mediates the effect of romantic cues on creative behaviour or not, the finding that creativity is raised by romantic cues is very exciting. Although the idea that attractive persons can stimulate creativity is not new in art, it is new in science and it is worth looking into more thoroughly to obtain better understanding of the processes connected to creativity.

It is not completely inexplicable that not much research has been done into factors that influence

creativity, because researchers are still puzzling on very basic questions. The most basic question being: What is creativity? As mentioned earlier, creativity is very subjective. Creativity is defined as the ability to produce work that is both original and appropriate. Who decides what is 'original'? Or 'appropriate'? Is there really one 'creativity', or are there many kinds of creativity on different domains (like music, science, writing), and if so, are the different kinds comparable? Does motivation play the same role in creativity on all domains? Another difficulty is that interpretation of creativity may differ between cultures and times. Is it possible to create an objective measure?

The question of how to measure creativity has engaged many scientists, yet most of the creativity tests that have been constructed so far, have demonstrated low predictive validity (Sternberg & Lubart, 1996). A popular measure of creativity is the Unusual Uses Test (UUT) (e.g., Sternberg & Lubart, 1996). The UUT is a divergent thinking task. People have to think of as many uses for a common object (e.g. a brick) as possible. Creativity score depends on the number of responses, number of different categories, statistical rarity, and amount of detail in responses. Especially the category 'amount of detail in responses' is very subjective. To avoid subjectivity, the Remote Associates Test was developed. This is one of the measures that Griskevicius et al. (2006) used to assess creativity. The RAT is based on the assumption that creativity includes the ability to make quick, appropriate associations between various concepts. Each RAT question consists of three words, like "dial, dress, flower", and people have to think quickly of a word that is connected to the three words. The answer in this case is 'sun'. Because there is only one correct answer to each question, scores can be obtained objectively, but does the RAT really measure creativity? One could reason that it would be more creative to give a 'wrong' answer, and connect, say 'elephant' to the

three words instead of 'sun'. Another popular way to measure creativity is the consensual assessment technique (e.g. Amabile, 1990; Griskevicius et al., 2006). People are asked to write a story (e.g. about an abstract painting), and these stories are rated on creativity by untrained judges. It is not completely clear what the criteria for creativity are, but this technique usually leads to high inter-judge agreement (Amabile, 1990; Griskevicius et al., 2006; Sternberg & Lubart, 1996), and this rating is different from dimensions as technical quality or aesthetic appeal (Amabile, 1990). These are just three of the measures that are used to assess creativity. The mere fact that these, and more, methods are still being used shows that the ideal way to measure creativity has not been decided on yet, and that there is room for improvement of creativity assessment.

Most research on creativity concerns the role of motivation. Because creativity is considered a highly valued quality, it is strange that the conclusions on creativity and motivation are applied so little in the 'real world'. The findings on the different effects of different kinds of rewards on intrinsic motivation should, for example, result in advice to teachers about effective use of rewards in class. Although creativity is prized in higher education and most branches of business (Eisenberger & Rhoades, 2001), it is often oppressed in school. Children have to stick to strict rules and assignments do not provide children with much choice (Deci et al., 2001). Obviously, this cannot be stimulating intrinsic motivation towards creative behaviour. Schools are just one of the places where the knowledge about motivation and creativity could be applied, also in other places (e.g. workplaces) this knowledge can be useful.

Creativity can be useful in many aspects of life. It is an encouraging idea that creativity is something that one can develop. The current research on

motivation and creativity also indicates that one should always do what one loves to do. Creativity can help during study, work and, not to forget, in the domain of love: it will help you catch your Prince(ss) Charming!

NOTES

1. From Oscar Wilde's "The picture of Dorian Gray", 1891.

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THE HELP DESK

Ten tips for aspiring academic journalists

By: Iris Dijkstra

1. Consider the magazine, newspaper or website you plan to write your article for. Look at the style in which articles in this medium are written and try to copy this style in your own text.

2. Think of an actual event that you can use as a stepping-stone. Most readers are not interested in scientific results per se – they are only interested in findings that shed some light on relevant issues. So ask yourself the question: why should I write this article now? And start your article by describing this connection.

3. Keep your target group in mind. Who will be your readers? How much do they already know about the subject? What aspect of the topic would particularly interest them? Your text should be appealing to the people you want to be your readers.

4. Forget about the traditional structure scientific articles are written in. In those texts, the most interesting part (the conclusion) is stated at the end. In popular articles you can't wait so long. Make your point in the beginning and work it out afterwards.

5. Keep it simple. Sentences shouldn't be too long, so don't use too many subordinate clauses. In the popular press unfortunately there is often not much space for nuances. This means that scientists need to be somewhat more direct than they often like.

6. Avoid jargon and meaningless, abstract containerwords, like 'factors', 'proces' or

'elements'. Try to be as specific as possible, use examples, describe things vividly. That is much nicer to read.

7. Make sure the outline of your text can easily be followed. Loads of articles lack a clear-cut structure, in which one paragraph logically follows the other. Readers shouldn't be left alone in a mess of sentences, asking themselves what point on earth you're trying to make. Guide your readers through your text.

8. 'Show, don't tell' is an important saying in journalism. Meant by it is that you'd better describe what you hear and see instead of presenting the conclusions of your observations. So don't talk about 'an old man' but say something about 'a wrinkled grandpa whose grey hair flattered him wonderfully, and it made his eyes seem bluer than ever before'.

9. 'Kill your darlings' is another saying. It means that writers should be prepared to delete the passages they are for some reason attached to, but that upon close inspection don't exactly fit in the text.

10. If you want to write an article for a certain magazine, newspaper or website, the best you can do is to contact the editors first and discuss your ideas with them. If you write an article on forehand and send this to the editors, you run the risk that they say it is too long or too short, that you should have interviewed this or that person as well, or that they just had this subject three months ago.

ALUMNI COLUMN

Francesca Righetti

In July 2007 we celebrated the graduation of the second cohort of the Research Master. We have asked one of the students, Francesca Righetti, to tell us about the research that she conducted for her master thesis. After graduation, Francesca started a PhD at the Vrije Universiteit in Interpersonal Processes under the supervision of Dr. Catrin Finkenauer and Prof. Dr. Caryl Rusbult. At the moment, she is carrying on and further developing her Master Thesis, investigating the phenomenon of “Interpersonal Regulatory Fit”. She will illustrate the findings of her project and the future directions of her research.

Interpersonal Regulatory Fit

I conducted my Master Thesis with Prof. Dr. Caryl Rusbult on a phenomenon that we called “Interpersonal Regulatory Fit”. The aim of the project was to extend the study of regulatory fit to an interpersonal context. We sought to investigate whether *interpersonal* regulatory fit (versus non-fit) might cause consequences for goal pursuits that parallel those of *intrapersonal* regulatory fit. But what is “Regulatory Fit”? This concept has its roots on Regulatory Focus Theory that distinguishes between two kinds of self-regulatory systems (Higgins, 1997). One self-regulatory system, *promotion focus*, concerns advancement, accomplishment, and aspiration (i.e., a concern

with the presence or the absence of positive outcomes). A second regulatory system, *prevention focus*, concerns protection, safety, and responsibility (i.e., a concern with the absence or the presence of positive outcomes). These two different regulatory foci are associated with different kinds of goals. Promotion focus is associated with the *ideal* self, or the individual’s representations of the attributes that he or she would like ideally to possess (hopes, wishes, and aspirations). Prevention Focus is associated with the *ought* self, or the individual’s representations of the attributes that he or she ought to possess (duties, obligations, and responsibilities). The two regulatory foci are also associated with different strategic regulatory orientations. Promotion focus is associated with a strategic inclination to accomplish “hits” and avoid errors of omission (i.e., absence of accomplishment). Promotion oriented people are eager to attain gains. In contrast, prevention focus is associated with a strategic inclination to attain “correct rejections” and avoid “false alarms” (i.e., making a mistake). Thus, prevention oriented people are vigilant to assure safety and non-losses.

Regulatory fit is experienced when people pursue a goal in a manner that sustains their own regulatory orientation, for example promotion oriented individuals who pursue an activity in an eager manner (Higgins, 2000). Doing so makes them “feel right” about what they are doing, with several consequences for goal pursuit. For example, when people experience regulatory fit, they experience stronger engagement and motivation in goal pursuit (Forster, Higgins, & Idson, 1998), they more positively evaluate the

activity of goal pursuit (Freitas & Higgins, 2000), and they are more inclined toward goal pursuit strategies that have higher regulatory fit (Higgins, Roney, Crowe, and Hymes, 1994). The same reasoning can be applied to understanding match between specific goals and regulatory focus. Although any goal can be pursued with either a promotion focus or a prevention focus, some goals are more compatible with a specific self regulatory orientation, resulting in a higher level of fit (Higgins, 2000). Thus, promotion oriented people experience regulatory fit when they are pursuing aspects of their ideal selves (promotion goals), and prevention oriented people experience fit when they are pursuing aspects of their ought selves (prevention goals).

What we found...

Prior to our project, no research has specifically investigated the possibility of interpersonal regulatory fit in the context of goal pursuits, studying situations in which people seek to accomplish goals with the support and the assistance of another individual. We argue that intrapersonal regulatory fit and interpersonal regulatory fit will share similar motivational consequences in goal pursuits. In one of our study, we examined the phenomenon of regulatory fit between goals and people's regulatory orientations. Specifically, we studied intrapersonal and interpersonal regulatory fit in the context of the Michelangelo Phenomenon, an interpersonal process by which close partners sculpt one another in such a manner as to move each person closer to (vs. further from) each person's ideal self (Drigotas, Rusbult, Wielselquist, & Whitton, 1999). Reaching the ideal self is a promotion goal. Therefore, intrapersonal regulatory fit should be experienced when there is a match between this goal and one's own regulatory orientation, whereas interpersonal regulatory fit should be experienced when there is a match between (a) this goal and

the partner's regulatory orientation, and/or (b) the individual's regulatory orientation and the partner's regulatory orientation. Both kinds of regulatory fit are expected to yield favorable consequences for actual movement toward the ideal self. To test our hypotheses, we employed data from three research occasions of a five-wave longitudinal study that was concerned with ideal goal pursuits in the context of ongoing close relationships. We analyzed the associations among relevant model variables using data based on three discrete measurement methods: (a) participants' self reports of their own and the partner's everyday behaviors; (b) participants' self-ratings and blind coders' ratings of videotapes of partners' ideal-relevant interactions; and (c) data from an eight-day daily diary procedure, during which participants provided measures of each construct *in situ*, in the context of their everyday lives. In all three kinds of measures we found good evidence for our intrapersonal regulatory fit hypothesis: to the extent that participants were promotion oriented they experienced greater movement toward their ideal selves. We found also good evidence for our interpersonal regulatory fit hypotheses: a) to the extent that the partner was promotion oriented, participants were reporting greater movement toward their ideal selves as a result of the partner's action and b) the combination of self promotion orientation with partner promotion orientation was particularly beneficial in promoting movement toward the ideal self, above and beyond effects that are attributable to each individual's promotion orientation. Thus, both partners sharing high levels of promotion orientation is beneficial for the pursuit of the ideal self, facilitating actual movement toward this promotion goal. These results appear particularly reliable for two reasons. First, we obtain consistent results using three different methods to test our hypothesis (questionnaire, diary and videotaped interactions coded by partner and by independent judges).

Second, we obtain consistent results across partners. For example, partner's regulatory orientation reported by partner was predictive of self's movement reported by self in the same way as partner's regulatory orientation reported by partner was predictive of self's movement reported by partner. Therefore, we found across partners agreement in their perception of the Michelangelo Phenomenon and in its relationship with regulatory orientation. In our study we examined a unilateral version of regulatory fit. In fact, we did not examine the pursuit of prevention goals, such as goals related to the ought self. Thus far, the Michelangelo phenomenon has been studied only in relation to the ideal self, but it is plausible that partners may also sculpt one another also toward each person's ought self. Thus, it remains to be seen whether intrapersonal and interpersonal regulatory fit can be experienced between prevention orientation and the correspondent type of goal, in a process that facilitates movement toward key aspects of the ought self.

What we hope to find....

In our Michelangelo Phenomenon study, we examined the phenomenon of interpersonal regulatory fit between the type of goals and the people's regulatory orientation. We are currently modifying one of the other studies of my Master Thesis to investigate the phenomenon of interpersonal regulatory fit between the strategic regulatory inclinations of individuals and their

partners. During the course of our everyday goal pursuits, we may find ourselves working on tasks or pursuing goals with the help, support and assistance of a partner that do versus do not match our own strategic inclinations (promotion or prevention). We will examine how individuals' goal pursuit activities are influenced in situations in which their partners provide strategic advice that is consistent with versus inconsistent with their own strategic inclinations. We expect that in case of interpersonal regulatory fit (e.g. prevention individual receiving suggestions by a prevention partner) people will experience positive motivational consequences for goal pursuit, such as greater feelings of "being right," greater motivation toward the goal, more enjoyment of the task, and greater attraction to the partner. Therefore, we expect that intrapersonal and interpersonal regulatory fit might yield parallel positive consequences for goal pursuits. Traditionally, goal pursuit has been investigated from an intrapersonal perspective. During the last decade, scientists have come to focus their attention on interpersonal models of goal pursuit, examining the role that close others may play in this process. Our research hope to extend this field of inquiry, highlighting a key concept (regulatory fit) to determine when the support of others promotes versus inhibits individual goal pursuits.

ALUMNI COLUMN

Suzanne van Gils

The Free Mind:

Could you please explain what your current employment is?

Suzanne van Gils:

At this moment I work for TNS, a market research company. I am employed at the international department, European Access Panel (EAP), which works with online panels in six European countries. My job consists of selecting panellists for surveys, based on background variables like profession, demographic area and age. These selections are made with SPSS and a specialized software program.

The Free Mind:

What was it exactly in the position and organization that stimulated you to apply?

Suzanne van Gils:

During the Research Master I enjoyed the company of the international students a lot. When looking for a job after graduation, I searched for a company with an international department. I had already heard positive stories about the working environment at TNS, so when I saw the job opening at EAP it appealed to me immediately. Furthermore working in this position has been a great opportunity to expand my knowledge of SPSS programming and to increase my knowledge about commercial research.

The Free Mind:

How does your job relate to your prior education?

Suzanne van Gils:

In my current job many basic aspects of

psychology are relevant. I use much of the knowledge about SPSS and programming logic that I acquired during the Research Master. I have always had a special interest to develop my statistical and programming skills and to learn how to use new programs. In my job at TNS I have the opportunity to expand these skills. Using sampling logic (what should be the right sample size, when is a sample balanced in a logical way) is another skill I use on a daily basis. Although commercial research is very different from the psychological research I used to conduct, the same logical rules still apply.

The Free Mind:

You have recently been accepted to a phd position at ERIM institute of management in Rotterdam, could you tell us about that?

Suzanne van Gils:

During the Research Master I have conducted research under supervision of Prof. Dr. Caryl Rusbult. The position at ERIM concerns one of her lines of research, the Michelangelo Phenomenon. The Michelangelo Phenomenon research states that two relationship partners “sculpt” each other, just like Michelangelo did with the marble to create his David. This sculpting process can bring both partners closer to their ideal self and thus be very beneficial to the persons and the relationship. There is also a possibility that the process leads to negative outcomes. Under supervision of Dr. Niels van Quaquebeke and Dr. Daan van Knippenberg, I will investigate the workings of the Michelangelo Phenomenon in leader-follower relationships.

IMPRESSUM

CONTRIBUTORS TO THE CURRENT ISSUE

Andrea Goezinne – *Editor in Chief, Articles on Creativity, Expert Interview, Discussion Forum*

Evert-Jan van Doorn – *Article on Creativity, Expert Interview*

Hanneke Hulst – *Neuroscience*

Jill Stack – *Proofreading, Laughing Corner*

Jitske Tiemensma – *Neuroscience*

Nicoletta Dimitrova - *Laughing Corner*

Floris Looijesteijn – *Layout and Website*

Marise Kasteleyn - *Neuroscience*

Regina Bode – *Expert Interview, Proofreading*

Suzanne van Gils – *Expert Interview, Alumni Column*

COVER

Paul Michael Wood

HONORED COLLABORATORS AND GUESTS

WRITERS:

Iris Dijkstra, Dr

Francesca Righetti, Msc

Marieke Roskes, Msc

- Vrije Universiteit, Amsterdam

Dianne Tice

- Florida State University

Carsten de Dreu, Prof. Dr.

Bernard Nijstad, Dr

- Universiteit van Amsterdam

CONTACT ADDRESS:

The Free Mind Magazine

Department of Social Psychology

Vrije Universiteit Amsterdam

Van der Boechorsstraat 1

1081 BT Amsterdam

The Netherlands

the.free.mind@gmail.com

www.thefreemind.nl

