

Received:

3 August 2018

Revised:

5 November 2018

Accepted:

18 March 2019

Cite as: Danilo Garcia, Izabella Jedel, Max Rapp-Ricciardi, Erik Lindskär, Kristian Molander-Söderholm, Cecilia Fagerström, Sverker Sikström. Creative utterances about person-centered care among future health care professionals are related to reward dependence rather than to a creative personality profile.

Heliyon 5 (2019) e01389.
doi: [10.1016/j.heliyon.2019.e01389](https://doi.org/10.1016/j.heliyon.2019.e01389)



Creative utterances about person-centered care among future health care professionals are related to reward dependence rather than to a creative personality profile

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Abstract

Background: Creativity can be defined as the creation of something that is novel, useful, and valuable for society (i.e., high-level creativity) and/or everyday life. In this context, people have implicit theories of creativity as being either non-malleable (i.e., a fixed creative mindset) or malleable (i.e., a growth creative mindset). Our aim was twofold: (1) to test an improved creative mindset priming paradigm (i.e., adding high-level/everyday creativity perspectives and using an organizational important task) by assessing if participants used different ways to answer to the prime and (2) to analyse the relationship between personality and creative utterances regarding an important topic in participants' future professions. **Method:** Students ($N = 73$) from different health care professions were randomly assigned to the non-malleable or malleable creative mindset priming paradigm (i.e.,

fixed vs. growth) and then asked to write about (a) their own creativity, (b) person-centered care in their professions (i.e., unusual use test), and to (c) self-rate their personality (Temperament and Character Inventory). We used natural language processing methods (i.e., Latent Semantic Algorithm) to analyse participants' responses in the different conditions and also responses in relation to self-reported personality.

Results: The fixed versus growth condition was predicted ($r = .55$, $p < 0.0001$), following Bonferroni correction for multiple comparisons by participants' descriptions about creativity. Although the condition was not predicted ($r = .07$, $p < 0.2755$) by participants' utterances about person-centered care, a t-test suggested that participants used words that were semantically different depending on the condition they were randomly assigned to ($t(2371) = 5.82$, $p = .0000$). For instance, participants in the growth condition used verbs more frequently, while those in the fixed condition used the personal pronoun *I* more often. Finally, only the temperament trait of *reward dependence* ($r = .32$, $p < 0.01$) predicted the person-centered care utterances.

Conclusion: We argue that the paradigm successfully primed participants to write about creativity and person-centered care using narratives with different semantic content. However, individuals' ambition to be socially accepted, rather than creative personality traits, elicited the utterances about person-centered care. The creative mindset priming paradigm presented here along language processing methods might be useful for measuring creative potential at work. We suggest that if health care personnel's notions of the activities related to care are generated from their drive to be socially accepted and not from a truly creative profile, the activities might be self-serving and not person-centered.

Keywords: Psychology, Nursing, Health profession

1. Introduction

Creativity is the invention of something that is novel, useful, and valuable at different levels (Amabile, 1996; Kaufman and Sternberg, 2006; Plucker et al., 2004; Runco, 2004, 2007; Simonton, 1977, 2004). In this context, people have different theories of their own and other people's attributes, including creativity, and they use these implicit theories systematically (Sternberg, 1985). These perceptions can in turn affect the way creativity is fostered and used (Baas et al., 2015). For example, people can have a fixed creative mindset, seeing creativity as non-malleable, concerning big problems of important impact to humanity and society (i.e., high-level creativity), but simultaneously have a growth creative mindset, seeing creativity as malleable, concerning everyday problem solving (i.e., everyday creativity) or vice versa (Dweck et al., 1995; Karwowski, 2014; Kaufman and Sternberg, 2006). These

specific mindsets can be induced or primed, thus, depending on what people are exposed to (i.e., primed to a fixed mindset vs. a growth mindset), the more or less creative, respectively, they act in different tasks (see O'Connor et al., 2013). Indeed, at a general level, creativity is a process that occurs in particular states of mind in a particular psychosocial context (Cloninger et al., 2016). However, a creative personality profile (i.e., the combination of being highly self-directed, cooperative, and self-transcendent) facilitates a person getting in a creative state of mind (i.e., calm alertness with a flowing intuitive awareness that awakens automatic intelligences), thereby helping her/him to discover original solutions that are adaptive for one's self, others, and humanity at large (Cloninger et al., 2016). In other words, creativity as a mindset can be induced, but at the same time facilitated by a creative personality profile.

It is not until recently that the consequences of implicit theories about creativity have been explored in organizational psychology (Puente-Díaz and Cavazos-Arroyo, 2017; Karwowski, 2014). This is important since creativity can be enhanced by reflecting on one's own creative performance (Sassenberg et al., 2017) or by priming a creative mindset (O'Connor et al., 2013). For instance, having a growth creative mindset is associated with higher creative problem solving (Karwowski, 2014), having a mastery approach to tasks, and adaptive motivational and performance outcomes (Puente-Díaz and Cavazos-Arroyo, 2017). In the health-care sector, for example, different methods to enhance creativity and innovation have been studied (e.g., Lindskog et al., 2017). However, most studies have limitations, such as, not including high-level creativity and everyday creativity perspectives when priming fixed or growth mindsets or using tasks that are not relevant for the persons' profession (e.g., to list as many uses for a roll of toilet paper). Here, we integrated everyday creativity and high-level creativity perspective in a paradigm aimed at priming fixed vs. growth mindsets on creativity (cf. Karwowski, 2014). We expected that this will enhance the way people are primed with regard to creativity in each condition. Specifically, using language processing techniques (see Sikström and Garcia, *in press*), we test if responses to the prime between individuals in each condition (fixed vs. growth) have different semantic content (i.e., the meaning).

In addition, instead of using tasks that might not be related to individuals' actual work, we asked students from different health care professions to generate examples of how they would integrate person-centered care in their own future professions as a measurement of creative potential. Person-centered care is, for most health care professions, a relevant model for health care that takes the whole person into consideration within health care practice (Mezzich et al., 2016; Ekman et al., 2011; Garcia et al., 2018). One could expect that utterances on person-centered care in the growth condition (vs. fixed condition) would be more creative and related to a creative personality profile (i.e., the combination of being highly self-directed, cooperative, and self-transcendent). With regard to personality, we

used Cloninger's biopsychosocial model (Cloninger, 2004), which organizes personality in two domains: temperament and character. Temperament represents emotional responses that are stable through time: *novelty seeking* (the degree to which a person seeks out new experiences, despite any possible consequences), *harm avoidance* (the degree to which a person restrains their urges, drives, and impulses), *reward dependence* (the degree to which a person is sensitive to or dependent on the responses and/or approval of others), and *persistence* (the degree to which a person perseveres in the face of difficulties or obstacles). Character on the other hand represents what the individual makes of her/himself intentionally (e.g., humanistic values and social aspects), which develops with time: *self-directedness* (self-determination, self-control, self-acceptance, reliable, and effective), *cooperativeness* (empathy, helpfulness, tolerance and acceptance of others as well as their needs), and *self-transcendence* (self-forgetfulness, patience, spirituality). Again, a creative personality profile (i.e., the combination of being highly self-directed, cooperative, and self-transcendent) facilitates a person getting in a creative state of mind (i.e., calm alertness with a flowing intuitive awareness that awakens automatic intelligences), thereby helping her/him to discover original solutions that are adaptive for one's self, others, and humanity at large (Cloninger et al., 2016). Hence, if utterances regarding person-centered care are truly creative, they should be related to a creative personality profile (i.e., the combination of being self-directed which allows for realistic thinking, cooperative which allows for communal thinking, and self-transcendent which allows vivid imagination; Cloninger et al., 2016). Importantly, in comparison to the general population, health care personnel under training are high in *self-directedness* and *cooperativeness*. However, they are also high in *reward dependence*, which makes them sensitive to social rejection (i.e., sentimental and warm, dedicated and attached, seek approval), and high in *persistence*, which leads to perseverant behaviour (i.e., industrious and diligent, hard-working, and ambitious) but also to depression if the individual is low in *self-directedness* at the same time (Eley et al., 2013). Hence, utterances about person-centered care might be associated to these temperament traits, specially *reward dependence* because its connection to social cues, rather than to a creative character profile.

2. Method

2.1. Ethical statement

After consulting with the University of Gothenburg's Review Board and according to law (2003: 460, Section 2) concerning the ethical research involving humans we arrived at the conclusion that the design of the present study (e.g., all participants' data were anonymous and will not be used for commercial or other non-scientific purposes) required only verbal consent from participants.

2.2. Participants and procedure

The participants, 73 students from different health professions (e.g., doctors, nurses, psychologists) at a university in the West of Sweden, were presented with a standard definition of creativity and randomly primed to either a fixed (“This trait is innate and constant, and therefore people differ in how creative they are.”) or a growth creative mindset condition (“This ability is universal and developable and therefore people can choose to be more or less creative every day.”). Depending on the assigned condition, participants were asked to write a description of what makes her/him a more or less creative person in her/his work compared to others and to reflect upon creative figures in history (fixed condition) or asked to write a description of how she/he had previously used her/his creative ability in their work and to reflect about how she/he in the future can use the same creative ability (growth condition). Hence, everyday creativity was included in the paradigm by asking participants to reflect about their creativity at work, while high-level creativity was included in the paradigm by asking participants to reflect about their own creativity in relation to others at work and also about creative figures in history. The participants had ten minutes to read and answer the creative mindset framing prime part of the study before they were presented with a short definition of person-centered care (cf. Ekman et al., 2011; Garcia et al., 2018) and asked to write down as many ways to work person-centered. The participants had five minutes to read the text and list as many alternatives as possible. As in the creative mindset framing prime part, the option was also given to move to the next part before the time limit was up. At the end, participants responded to a battery of instruments including the Temperament and Character Inventory (Cloninger et al., 1993). All data was collected through the online platform Qualtrics.

2.3. Measures

2.3.1. Creative mindset framing prime (Jedel, 2017)

The creative mindset framing prime was conducted to either prime a growth creative mindset or a fixed creative mindset and both everyday creativity and high-level creativity (cf. Karwowski, 2014). The participants have ten minutes to read and answer the text, and have the option to move to the next part/conclude the task before the time limit.

The growth creative mindset framing prime was formulated as follows:

“Creativity is about being able to create something that is new, useful, and valuable. This ability is universal and developable and therefore people can choose to be more or less creative every day. First, give one example of how you have previously used your creative ability in your work. Then, reflect about how you

in the future can use the same creative ability to create something that is new, useful and valuable to others.”

The fixed creative mindset prime was formulated as follows:

“Creativity is about being able to create something that is new, useful and valuable. This trait is innate and constant, and therefore people differ in how creative they are. First, give one example of what makes you a more or less creative person in your work compared to others. Then, reflect about what the most creative people that have lived, have created that has been new, useful and valuable to others.”

2.4. Creative utterances about person-centered care

Based on earlier work (e.g., O'Connor et al., 2013), participants were presented with a modified “unusual uses test” (Guilford, 1967), in which the concept of person-centered care was explained and they were then asked to list as many ways in which they could work person-centered in their profession. The participants had five minutes to read the text and list as many alternatives as possible, and had the option to move to the next part/conclude the task before the time limit was up. The test was formulated as follows:

“Person-centered care is based on a human view of the patient as a person with own experience of their own situation and their own conditions, resources and obstacles. The person thus becomes a partner in their own healthcare. It is an approach that increases the possibility for people’s resources, abilities and own goals to be used in health and medical care. Being Person-centered involves a partnership between patient, her/his family and the healthcare provider. The starting point is the patient’s story, which is documented in a structured manner that results in a health plan containing goals and strategies and is used for implementation and follow-up.

How can person-centered care be used in practice? Enter as many possible ways of working person-centered as you can think of (only one proposal per line)”

2.4.1. Personality

The Temperament and Character Inventory (Cloninger et al., 1994) was designed to measure the two personality domains in Cloninger’s biopsychosocial model of personality. The four temperament dimensions are: *novelty seeking*, *harm avoidance*, *reward dependence*, and *persistence*. The three character dimensions are: *self-directedness*, *cooperativeness* and *self-transcendence*. Here we used a short version

consisting of 48 statements and a 5-point Likert scale. The *Cronbach's* α for the seven personality dimensions were between .64-.84.

2.5. Statistical procedure

In order to investigate if the participants generated semantically different responses on the fixed versus growth manipulation and to test if the utterances about person-centered care were related to demographical (i.e., age and gender) and personality variables, we first mapped the generated words to a semantic representation using the Latent Semantic Analysis algorithm and studied whether the semantic representation of descriptions of creativity and utterances on person-centered care predicted the outcome variables. In short, a semantic representation is a vector describing the position of the words, generated by the participants in each condition, in a high-dimensional semantic space that is composed of all words in the Swedish language (see [Sikström and Garcia, in press](#)). The statistical procedure we used is briefly explained below, for statistical details please see [Sikström and Garcia \(in press\)](#).

First, we created the semantic space of the generated words by using the web-based software SemanticExcel (www.semanticexcel.com) developed by Sverker Sikström at Lund University for computing and analyzing semantic representations. SemanticExcel uses predefined semantic representation, that was built on text data from Google N-gram, and uses a version of the latent semantic analysis algorithm ([Landauer and Dumais, 1997](#)) to generate the semantic representations (for the particular method and technical details of how the semantic representation are generated see, for example [Kjell et al., 2018](#)). Here we used a Swedish semantic representation, consisting of 256 dimensions and 120k words, that was generated from a large N-gram corpus provided by Google (see <http://ngrams.googlelabs.com>), which comprises a large number of Terabytes of text data (for recent description of the Google n-gram database, see [Lin et al., 2012](#)). The quality of the semantic representation is evaluated by a synonym test. In the semantic representation, the first dimension typically codes for word frequency (or log(frequency)), the second dimension of word for valence, and the following dimensions codes for more complex meanings for the words. Secondly, we mapped the words generated by the participants to this semantic space. With the SemanticExcel software we added the vectors representing each of the words generated by the participants (i.e., descriptions about creativity in each condition and utterances about person-centered care). This vector was normalized to the length of one. The words generated by the participants are quantified based on the semantic representation of the Google n-grams database (i.e., their co-occurrence in natural language). Words that do not exist in the semantic representation were simply ignored (for detailed information on this statistical procedure please see, among others, [Kjell et al., 2018](#); [Garcia et al., 2015](#)).

3. Results

First, we investigated if the semantic representation of participants' descriptions of creativity and utterances about person-centered care predicted the condition to which the participants were randomized to (fixed vs. growth). This was done in order to test if the participants were primed to generate descriptions and utterances that were semantically different depending on the condition they were randomized to. We used least absolute shrinkage and selection operator (Lasso) regressions for these analyses. The fixed versus growth condition ($r = .55$, $p < 0.0001$) was predicted, following Bonferroni correction for multiple comparisons, by the semantic representation of participants' descriptions about creativity. However, the condition was not predicted ($r = .07$, $p < 0.2755$) by the semantic representation of participants' utterances about person-centered care (see Table 1).

In order to further investigate which content in participants' descriptions about creativity was predicted from each condition (i.e., fixed vs. growth), we followed three different steps. (1) First, all the words in participants' responses in the fixed and in the growth condition were summed to one semantic representation (i.e., a vector describing all these words' position in a high-dimensional semantic space that is composed of all words in the Swedish language; Sikström and Garcia (in press)), respectively; then the semantic representation of responses in the fixed condition was subtracted from the semantic representation of responses in the growth condition. (2) Then, we computed how similar the content is in meaning (i.e., semantic

Table 1. Correlation between predicted and empirical values (i.e., assigned condition, age, gender, and personality and participants' and responses to priming and to how they would conduct person-centered care in their professions).

		Answer to Priming (Descriptions of Creativity)			Utterances about Person-Centered Care		
		<i>r</i>	<i>p</i>	<i>Lambda</i>	<i>r</i>	<i>p</i>	<i>Lambda</i>
Demographics	Condition	0.55	0.0000	0.04	0.07	0.2755	0.00
	Age	0.06	0.3048	0.00	0.26	0.0151	0.16
	Gender	0.05	0.3467	0.00	-0.19	0.9416	0.00
Temperament	Novelty Seeking	0.16	0.0952	0.02	-0.01	0.5362	0.16
	Harm Avoidance	0.01	0.4846	0.08	0.02	0.4332	0.00
	Reward Dependence	0.04	0.3841	0.16	0.32	0.0038	0.08
	Persistence	-0.01	0.5025	0.04	-0.21	0.9531	0.16
Character	Self-directedness	0.16	0.0848	0.00	-0.13	0.8613	0.00
	Cooperativeness	0.05	0.3314	0.00	0.02	0.4307	0.00
	Self-transcendence	0.10	0.2010	0.00	-0.33	0.9967	0.00

Note. The values show Pearson correlation coefficient (*r*) between predicted values from Lasso regression, and the *p*-values that the correlation are significantly larger than zero. *Lambda* is the optimized value for the coefficient that penalties weighs in the Lasso regression. Significant values, after Bonferroni correction, are in **bold type**.

similarity) between this difference and the semantic representation of responses in the fixed condition by calculating the cosine of the angle between these two points (for methodological details see [Sikström and Garcia \(in press\)](#)); we did the same calculation to compute the semantic similarity between the difference and the semantic representation of responses in the growth condition. To reduce the risk of biasing the results, a leave-10%-out procedure was employed in these two steps. This means that 10% of the responses are left out in step 1, but used in step 2. This is then repeated for another 10%-portion of the responses, and continued until we computed the difference between the semantic representation of the fixed condition responses and the semantic representation of the growth condition responses for all responses. Hence, each participant has now a semantic similarity score that represents the difference between the conditions. In the last step (3), we used a *t-test* to compare these semantic similarity scores between participants in the fixed vs. growth conditions. The *t-test* was significant ($t(9185) = 17.29, p = .0000$). Thus, suggesting that participants used words that were semantically different depending on the condition they were randomly assigned to. [Fig. 1](#) shows the words that were significantly related to each condition.

We followed the same procedure in order to further investigate which content in participants' utterances about person-centered care were predicted from each condition (i.e., fixed vs. growth). The *t-test* was significant ($t(2371) = 5.82, p = .0000$). Thus, suggesting that participants used words that were semantically different depending on the condition they were randomly assigned to. [Fig. 2](#) shows the words that were significantly related to each condition.

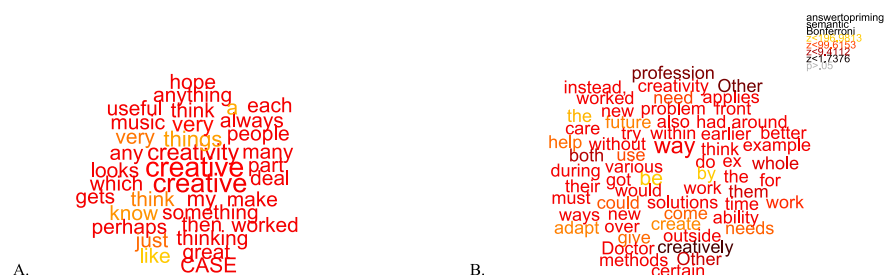


Fig. 1. Words in participants' descriptions about creativity that were significantly related to the fixed condition(A) and the growth condition (B). Note. The figure shows color-coded data-points that significantly discriminate between the fixed condition (A) and the growth condition (B). This axis consists of 540 data points that are significant after Bonferroni correction for multiple comparisons (643 data points that are significant without correction for multiple-comparisons of a total of 1,773 data points, including the comparison data set). Words with a natural word frequency (based on Google N-gram) higher than 0.01 were not plotted (i.e. these words are typically function words that do not carry meaning). The number of plotted words were limited to 100 for sake of clarity. The font size represents the frequency of occurrence of the words.

In order to investigate the relationship between the semantic representation between utterances about person-centered care and personality we used least absolute shrinkage and selection operator (Lasso) regressions (see Table 1). We found that only the temperament trait of *reward dependence* ($r = .32, p < 0.01$) was predicted by the semantic representation of utterances regarding person-centered care. In Fig. 3, we also plot the words in the semantic representation of utterance regarding person-centered care that were significant in the prediction of *reward dependence*.

4. Discussion

Our aim was twofold: (1) to test an improved priming creative mindset paradigm (i.e., adding high-level creativity and everyday creativity perspectives and using an organizational important task) by testing, using natural language processing, if participants used different ways to answer to the prime and (2) to analyse the relationship between personality and creative utterances regarding an important topic in participants' future professions. The improved paradigm successfully primed individuals to describe creativity and person-centered care semantically differently. Individuals in the growth condition seem to use more verbs (*ha* [have], *need* [behöver], *try* [försöka], *create* [skapa]) when describing their creativity, while participants in the fixed condition used other types of words, specially the word *jag*, which means *I* in Swedish. Importantly, first person pronouns are most common among depressed individuals (Campbell and Pennebaker, 2003; Pennebaker, 1997, 2011). In this line, the utterances about person-centered care seem to be richer in content. However, the way individuals described person-centered care was associated to individual differences in the tendency to respond markedly to signals of reward (e.g., social approval, social support, and sentiment). That is to say, their notion of how to

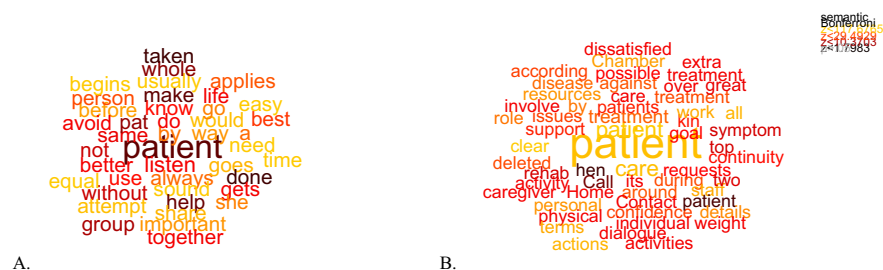


Fig. 2. Words in participants' utterances about person-centered care that were significantly related to the fixed condition(A) and the growth condition (B). Note. The figure shows color-coded data-points that significantly discriminate between the fixed condition(A) and the growth condition (B). This axis consists of 203 data points that are significant after Bonferroni correction for multiple comparisons (258 data points that are significant without correction for multiple-comparisons of a total of 804 data points, including the comparison data set). Words with a natural word frequency (based on Google N-gram) higher than 0.001 were not plotted (i.e. these words are typically function words that do not carry meaning). The number of plotted words were limited to 100 for sake of clarity. The font size represents the frequency of occurrence of the words.

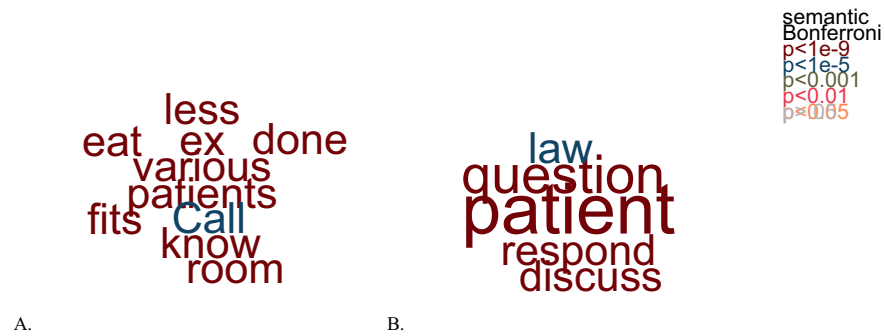


Fig. 3. Words in the semantic representation of utterance regarding person-centered care that were significant in the prediction of *reward dependence*. Note: The data is arranged in word clouds, where the left word cloud shows data-points that significantly discriminate between (A) low *reward dependence* and (B) high *reward dependence*. This axis consists of 21 data points that are significant after Bonferroni correction for multiple comparisons (211 data points that are significant without correction for multiple-comparisons of a total of 804 data points, including the comparison data set). Word with a natural word frequency (based on Google N-gram) higher than 0.001000 is not plotted (i.e. these words are typically function words that do not carry meaning). The font size represents the frequency of occurrence of the words. Predictions were made by multiple linear regression (for details, see Kjell et al., 2018). Significance testing are made by correlation to a numeric variable using an N-leave-out-cross validation procedure ($df = 66$).

conduct person-centered care in their professions was influenced by their *reward dependence* and not by a fixed or growth creative mindset nor by a creative personality profile. The most significant word related to low reward dependence was actually associated to what commonly is referred in the literature as person-centered care (cf. Garcia et al., 2018), namely, *samtal* [conversation]. At the other side of the spectrum, the word was *lag* [team], which is easily associated to both reward dependence and person-centered care (Garcia et al., 2017, 2018). This might have repercussions for health care organizations, when implementing person-centered models or attitudes. If the health care personnel's notions of the model or the activities related to person-centered care are generated from their drive to be socially accepted and not from a truly creative profile, the activities might be self-serving and not person-centered. In other words, the importance and role of individual differences among employees needs to be considered in real creativity craving tasks at work.

4.1. Limitations and future research

Although we showed that the paradigm successfully primed participants to write narratives with different semantic content about creativity and person-centered care, the present study is foundational and exploratory at this stage. For instance, the differences in creative mindset do not seem to be related to a creative personality profile. That being said, it is plausible to argue that the utterances about person-centered care, generated after the creative mindset priming, were not creative; since they were not related to a creative personality profile (Cloninger et al., 2016) that allows

for realistic thinking (self-directed), communal thinking (cooperative), and vivid imagination (self-transcendent). This might be due to the fact that, in comparison to the general population, health care personnel under training have difficult work conditions (e.g., work overload and hard decisions that might create feelings of inadequacy) and are high in *reward dependence* (i.e., sentimental and warm, dedicated and attached, seek approval) and high in *harm avoidance* (i.e., worrying, pessimistic, doubtful, shy and low in energy), which makes them sensitive to social rejection, in turn, inhibiting a creative state of mind (Cloninger, 2013; see also Rapp Ricciardi et al., 2019; Garcia et al., 2019a, 2019b). In other words, personnel under training might be more prone to worrying more about being disliked than being person-centered. Person-centeredness is definitely related to being cooperative or being helpful, being able to use active listening, and empathic; while *reward dependence* is about being sympathetic and warm, but also about pleasing others in order to seek approval (Cloninger, 2004). Experienced health care personnel, on the other hand, might be more self-directed, cooperative, and persistent, thus, less prone to worry about social rejection (see Eley et al., 2013). Hence, the present study needs to be replicated among health care professionals exercising their jobs and using larger samples.

Moreover, besides the creative mindset paradigm presented here, if a creative personality profile facilitates a person getting in a creative state of mind (i.e., calm alertness with a flowing intuitive awareness that awakens automatic intelligences) (Cloninger et al., 2016), future research might benefit of past research showing that character traits are positively associated to psychophysiological coherence, a state of calm alertness that occurs naturally with sustained positive emotions and can be induced by slow, deep breathing, relaxing, and sleeping; which increases efferent parasympathetic activity (Zohar et al., 2013). In other words, suggesting that heart rate variability (Cloninger, 2004; Cloninger, Zohar & Cloninger, 2010), which is associated with more peripheral nervous system inhibitory activity, might facilitate a person getting in a creative state of mind (i.e., calm alertness with a flowing intuitive awareness that awakens automatic intelligences), thereby helping her/him to discover original solutions that are adaptive for one's self, others, and humanity at large (Cloninger et al., 2016). More specifically, cardiac coherence techniques might be tested as another paradigm to prime a creative mindset.

Finally, it is plausible to accentuate that a creative character personality profile is not only associated to a creative state of mind, but also to being resilient (Eley et al., 2013). Hence, if organizations support employers to cultivate a creative character, this might influence not only creativity in important and relevant tasks at work, but also the employers' health and sense of free will (Zohar et al., 2013) (cf. Garcia et al., 2018; McCormack and McCance, 2010; McCormack et al., 2010; Nursing and Midwifery Board Australia; 2008; IAPO, 2007; Cloninger, 2013).

“Without freedom, there is no creation.”

Jiddu Krishnamurti

Declarations

Author contribution statement

Danilo Garcia: Conceived and designed the experiments; Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Izabella Jedel: Conceived and designed the experiments; Performed the experiments; Wrote the paper.

Max Rapp-Ricciardi, Erik Lindsjär, Kristian Molander-Söderholm, Cecilia Fagerström: Contributed reagents, materials, analysis tools or data; Wrote the paper.

Sverker Sikström: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Funding statement

This work was supported by a grant from The Swedish Research Council (Dnr. 2015-01229). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing interest statement

The authors declare no conflict of interest. The views and ideas expressed here are those of the authors and do not necessarily reflect the official policy or position of any agency of the Swedish government. All authors, with the exception of Sverker Sikström and Max Rapp-Ricciardi, work at the Blekinge Center of Competence, which is Region Blekinge's research, development, and innovation unit. The Center works with interdisciplinary scientific research using person-centered methods to conduct community projects and the dissemination of knowledge in order to increase physical, psychological, and social health among the inhabitants of the county of Blekinge, Sweden.

Additional information

No additional information is available for this paper.

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