

COUNTERFACTUAL THINKING AS RELATED TO ANXIETY AND SELF-ESTEEM

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Abstract: The research study deals with the occurrence and characteristics of counterfactual thinking (CT) in a sample of 456 nurses, and relationships between this type of thinking and personality - of its characteristics, those studied were anxiety, self-esteem, rumination, reflection, curiosity, aggressiveness and depressiveness. Results showed a higher CT occurrence and higher rumination and reflection level related to higher anxiety, the relation between CT frequency and level of self-esteem was not significant. CT as a help to possible future problem solving (representing the adaptive function of CT) is mentioned by up to 77.26% of nurses. This contribution (help) is related to a higher level of curiosity and reflection and a lower level of anxiety.

Key words: counterfactual thinking, anxiety, rumination, reflection, self-esteem

Counterfactual thinking (CT) is part of our everyday life and occurs especially after an unsuccessful solution of a problem. It is thinking about unrealized solution alternatives. Counterfactual thoughts are often evaluative, specifying alternatives that are in some way better or worse than the reality. Counterfactual thoughts are mental representations of alternatives to past events, actions, or states (Byrne, 2005; Roese, 1997, 2005), i.e. what might have been if... thoughts. If we contemplate a better alternative than the reality, we speak about upward counterfactuals and if we contemplate a worse alternative than the reality, we speak about downward counterfactuals. Counterfactual thinking is common across nations and cultures (Gilovich et al., 2003), even if the particular focus of those counterfactuals reflects

the different priorities inherent in different cultures.

The primary function of counterfactual thinking lies in the management and coordination of behavior. Thinking about what might have been influences performance and promotes improvement. Counterfactual thinking is closely connected to goals and is part of regulatory mechanisms that regulate behavior, especially within social interactions (Segura, Morris, 2005).

There are some research studies confirming that counterfactual thinking can provoke negative emotions, however there are also studies showing that counterfactual thinking can have a positive effect as well. Thinking about what might have been can for example suggest paths for what might be in the future (Roese, 1997, 2005).

Counterfactual thinking often follows a traumatic experience (Taylor, Schneider, 1989) and failure to reach a goal (Roese, 1997; Byrne, 2002). Roese and Olson (1997) state that a negative emotion

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evoked by a negative experience triggers counterfactual thinking. The response to the negative affect is a cognitive response - a narrowed focus and more highly systematic thinking.

However, according to some authors (e.g., McMullen et al., 1995; Roese, 1997), counterfactual thinking can possess an adaptive function, i.e. can improve problem solving and increase the sense of control over future events. Counterfactual thinking can be accompanied by future behavior plans, i.e. can fulfill the adaptive function by helping one to gain control over future events (Roese, Olson, 1997). Davis et al. (1995) note that whilst counterfactuals may help people to form plans and develop a sense of control, in cases where it is not possible for one to have control, this process may lack adaptive value.

Some authors understand CT as a coping strategy that can be active, problem-oriented (focus on the problem situation, especially in the case of higher controllability of conditions) or emotional (self regulation, especially with low controllability of conditions, or a problem situation).

If CT subsides in an appropriate time after the failure, we can speak about its function in the coping process, if it continues for an inappropriate time - it turns into rumination, which has a negative effect on the effectiveness of coping.

According to the private self-consciousness concept of Trapnell and Campbell (1999), one of two 'modes' of self-consciousness is rumination, the other is reflection. Rumination represents repeated self-assessment, mainly of negative aspects of the self when it is faced with fear of threat, loss or injustice to itself, whereas reflection is related to openness to experiences, curiosity and intellectual interest in

self-cognition. According to authors, both factors are relatively independent and, in general, higher self-esteem does not imply an improved or worsened self-experience. Apart from persons with a high level of either reflection or rumination, Gurňáková (2004) for example, also identified persons with a mixed 'mode' of self-consciousness - such as where both motives for increased self-consciousness are present - curiosity and fear.

Rumination is related to anxiety as well. In social anxiety research, Kocovski et al. (2005), for example, found that persons high in social anxiety were more likely to ruminate when faced with fictional social situations. Those high in social anxiety were highly concerned about potential past failures and inadequate behavior in social situations, resulting in both greater rumination and greater upward counterfactual thinking (Rachman et al., 2000). These findings raise the question of the relation between rumination and counterfactual thinking. Much past research has established an association between rumination on one hand and anxiety on the other (e.g., Cox et al., 2001). Thus it is possible that the link between counterfactual thinking and anxiety might be explained entirely in terms of rumination. In their most recent research, Roese et al. (see Epstude, Roese, 2008) discovered that excessive counterfactual thinking was a better anxiety predictor than excessive rumination.

Counterfactual thinking represents a special cognitive process that includes rumination and regret. However, according to Davis et al. (1995) this form is conceptually different from other rumination forms as it includes simulation of events as they could or should have been, and not only a simple repetition of the real event.

PROBLEM

Research into counterfactual thinking has been an international psychological issue for the past 20 years especially. Its main focus lies in the study of the general characteristics of the process. The study of individual differences in counterfactual thinking related to personality characteristics contributes other aspects to its complexity. This form of thinking has not been systematically studied in Slovakia, and tended to be included in logic rather than psychology. We are accordingly interested in the psychological aspect of counterfactual thinking, specifically its link to selected personality characteristics. Since counterfactual thinking is generally connected to negative emotions, we will focus on the relationship with anxiety and self-esteem, as well as rumination and reflection - as dimensions of private self-consciousness.

Sample

The basic research sample consisted of 456 nurses between 22 and 56 years of age.

For analysis purposes we further determined extreme groups with low ($n = 68$) and high ($n = 73$) anxiety according to the STPI questionnaire (Spielberger) score by the $\pm 1SD$ criterion. The same $\pm 1SD$ criterion was used to determine extreme groups based on the score of Rosenberg self-esteem scale - low self-esteem ($n = 87$) and high self-esteem ($n = 100$). According to the RRQ questionnaire score (Trapnell, Campbell) groups with low ($n = 78$) and high ($n = 75$) rumination, and low ($n = 71$) and high ($n = 71$) reflection were determined.

METHOD

Counterfactual thinking (CFT) (Ruiselová, Prokopčáková, Kresánek, 2007) - 10 questions on quantitative and qualitative aspects of thinking about unrealized alternatives of stress situation solutions.

STPI questionnaire (Spielberger et al., 1980) - determines the level of characteristics: anxiety, curiosity, aggressiveness and depressiveness.

Rosenberg Self-Esteem Scale (SES) (Rosenberg, 1965) - determines the level of self-esteem.

Rumination and Reflection Questionnaire (RRQ) (Trapnell, Campbell, 1999) - contains two subscales: rumination and reflection. Rumination is the level to which someone repeatedly and almost unhealthily contemplates himself and things he did (especially their negative aspects). Reflection represents the level of motivation to learn new information about oneself.

RESULTS AND DISCUSSION

The counterfactual thinking occurrence analysis showed that 58.24% of women in our sample (nurses) engaged in this type of thinking often (as opposed to 41.76% with low CT occurrence). We have also confirmed the fact given by several authors (e.g., Roese, 1997, 2005, and others), that upward as opposed to downward counterfactuals are prevalent. In our sample, up to 78.79% of women preferred upward counterfactuals to 21.21% of those who preferred downward counterfactuals.

Regarding the evaluation of CT contribution to possible future problem solutions, up to 77.26% of nurses said that CT was helpful in finding a solution (as opposed to 22.74% that said CT was scarcely helpful for the future).

Only 19.04% of women said that CT serves more as a hindrance in finding solutions to problems, as opposed to 80.96% of women who have rarely experienced this feeling.

The given frequency data was tested by χ^2 and differences are highly significant.

Thus we agree with other authors that CT can be functional, corrective and motivational in terms of support in solving possible future problems. These however depend on the controllability of the antecedent (initial conditions) of the solved problem, as several research studies confirm (Giroto et al., 1991; Roese, 2005, and others).

Results of the complete sample divided into two groups according to CT frequency showed (t-tests) that a more frequent CT is related to higher rumination ($p < .001$) as well as reflection ($p < .001$) as well as reflection ($p < .001$) as well as reflection ($p < .001$). The correlation analysis confirmed the highly significant positive relation of rumination as a way of self-cognition to anxiety as a personality characteristic ($r = .454^{**}$).

More frequent CT is in the complete sample related to higher anxiety and aggressiveness, but also to a higher level of curiosity which is connected with reflection, as we have mentioned at the beginning of our study (Figure 1).

The analysis of rumination and reflection in extreme groups according to anxiety and level of self-esteem presented similar findings (Table 1).

According to the level of anxiety the difference in CT frequency was of borderline significance. According to the level of self-esteem, χ^2 did not confirm the significant difference of CT frequency in extreme groups.

However, Callander et al. (2007) came to the conclusion that anxiety has a positive link to fluency, frequency and duration of upward counterfactuals. Their results were obtained in women after a traumatizing experience (miscarriage) with a high level of anxiety.

Our sample was a general selection of women who had had no traumatizing expe-

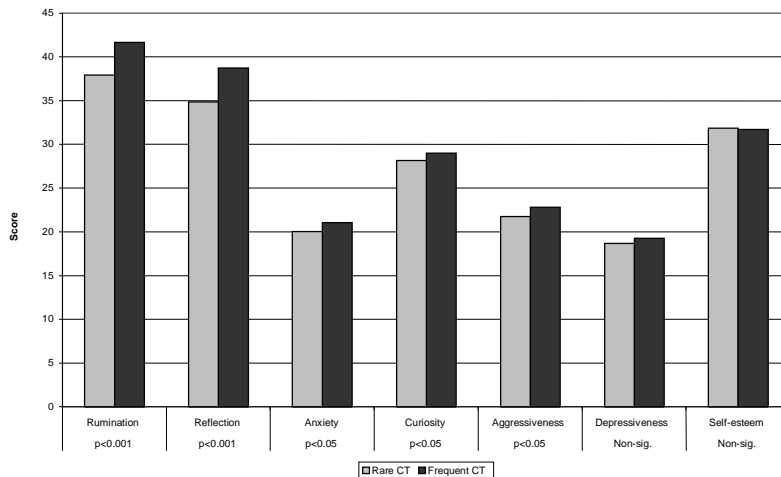


Figure 1. Relationship of CT frequency and personality characteristics

Table 1. Rumination and reflection as related to anxiety and self-esteem

RRQ		n	AM	SD	t	p
Rumination	Low anxiety	65	35.65	8.038	6.860	.000
	High anxiety	67	44.78	7.217		
Reflection	Low anxiety	63	37.29	7.942	.419	.676
	High anxiety	70	37.84	7.312		
Rumination	Low self-esteem	82	41.80	6.825	4.065	.000
	High self-esteem	96	37.63	6.852		
Reflection	Low self-esteem	83	36.60	6.701	1.310	.192
	High self-esteem	93	37.94	6.787		

rience, and the results showed a tendency toward CT in more anxious women. Our finding based on the research results shows that failure to solve a problem is emotionally more significant in highly anxious women than in less anxious women. We have not determined any differences between both extreme groups in the emotional experience of problem solving success, though.

Counterfactual thinking is significantly more frequently the cause of sadness in women with a high level of anxiety, aggressiveness and depressiveness. This saddening is related to higher rumination, as well as higher reflection - as a 'mode' of self-consciousness.

Counterfactual thinking is significantly more often a hindrance factor in problem solving for women with a high level of anxiety than for less anxious women. Women with a low level of anxiety consider this type of thinking in solving future problems helpful.

Women who claimed that CT was helpful in the future also demonstrated a higher level of curiosity. Their level of reflection was also higher, but not their rumination.

We found higher rumination in nurses who consider CT a hindrance in solving

future problems. They are more anxious, aggressive and depressive and have lower self-esteem compared with those of the opposite opinion.

Analogous results were also achieved in groups of women with high and low self-esteem, whereas women with a low level of anxiety corresponded to high self-esteem and women with a high level of anxiety to low self-esteem.

Our previous research study (Ruiselová, Prokopčáková, Kresánek, 2007) showed that women more inclined towards counterfactual thinking manifest a higher level of anxiety and incline towards upward counterfactuals. Women with higher self-esteem rarely considered CT.

Frequent CT appears to be mainly related to the mixed type of self-consciousness as described by Gurňáková (2004) and demonstrates a higher level of rumination and reflection. A cognitive and emotional aspect is present in CT - although we understand CT as a coping strategy.

Our cited research from 2007 showed, that women with higher coping effectiveness (determined by sense of coherence SOC - Antonovsky) demonstrated less frequent CT. This result corresponds to present findings, as the level of anxiety is

in a significantly negative relationship to coping effectiveness - it is a multiply (by several authors) confirmed finding.

CONCLUSION

On the international level it is mainly the process of counterfactual thinking that is studied. Studies of CT in the context of personality are quite rare. Our results confirm that CT is undeniably linked with personality characteristics as well as coping with stress situations. Content analysis of this type of thinking shows - on a different sample of women (Ruiselová, Prokopčáková, Kresánek, 2007) - the prevalence of unspecified, common everyday life problems. We consider the study of individual differences in CT in the context of several personality characteristics as perspective for the future and shall continue on this road. The content analysis of CT from our present sample will be the topic of the next study.

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KONTRAFAKTOVÉ MYSLENIE VO VZŤAHU K ANXIETE A SEBAHODNOTENIU

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Súhrn: Štúdiá sa zaoberá výskytom a charakteristikami kontrafaktového myslenia (CT) vo výbere 456 zdravotných sestier a vzťahmi tohto typu myslenia s osobnosťou - z jej charakteristík sa skúmali najmä anxieta, self-esteem, ruminácia, reflexia, zvedavosť, agresivita a depresivita. Výsledky ukázali vyšší výskyt CT aj vyššiu úroveň ruminácie a reflexie spájajúce sa s vyššou anxiétou, vzťah frekvencie CT a úrovne self-esteemu významný nebol. Pomoc CT pri možnom riešení problémov v budúcnosti (reprezentujúca adaptívnu funkciu CT) uvádza až 77,26% zdravotných sestier. Tento prínos (pomoc) sa spája s vyššou úrovňou zvedavosti, reflexie a s nižšou úrovňou anxiety.