Can Autobiographical Memory Protect Against a Threat to Illusion of Control?

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Abstract

The purpose of this study was to examine whether the type of the recalled autobiographical memory (gaining control, which led to successful outcome; losing control which led to negative outcome; positive memory) has an influence on the level of illusion of control, after illusion of control was threatened. There were 179 participants. First, they received a threat to IOC, and then were randomly distributed to one of three AM condition, after which their levels of self-esteem (RSES scale), affective (PANAS-X scale) and cognitive well-being (SWLS scale) were measured. Significant differences were found between gaining and losing control conditions, and between positive memories and losing control conditions, on the PANAS-X scale. This means that when illusion of control is threatened, it can be restored by remembering a past positive event, whether control related or not. So, in this research, only a significant effect of memory valence was found.

Keywords: autobiographical memory, threat, illusion of control, control

The belief that we have control over our own lives, or the illusion of control, is very important for people. A lack of this belief repeatedly shows a correlation with different disadvantageous outcomes, such as lower levels of self-esteem or well-being. It even shows a correlation with some mental health issues, such as depression (Taylor & Brown, 1988). Still, due to the illusory nature of this belief, it can easily be shattered in everyday life. This is why this research tries to discover a possible way to restore it. So far, researches show different ways to increase this belief again (Kouchaki, Oveis & Gino, 2014; Fast, Gruenfeld, Sivanathan & Galinsky, 2009). This research will try to establish if autobiographical memory can be used to this end as well.

First, the concepts of autobiographical memory and illusion of control will be presented. Then, there will be an overview of existing research that point to the conclusion that autobiographical memory can be used as a buffer against threats. Next, researches that show that illusion of control can be increased in various ways will be presented. Last, current research will be presented.

Autobiographical memory

Autobiographical memory (AM) presents memory of one's personal past and it relates to distinct points in the personal past. The past is recalled from the person's own viewpoint and it includes an awareness of one's self during these recalled past moments. These memories are not just something that happened to an individual personally, they also have a certain importance for his person. This type of memory is explicit and declarative (Nelson & Fivush, 2004).

Many researchers agree that autobiographical memory serves several different functions. Bluck (2003) distinguishes between three different functions – social, self and directive. These functions are supposed to explain the purpose of autobiographical memory.

She describes each function and its characteristics, what distinguishes them, but also points out that in everyday life they are not completely separated (Bluck, 2003).

The first one is the self-function. Its main purpose is to maintain a consistent picture of the self. However, this picture tends to be more favorable than realistic. We view ourselves as better in the present than we were in the past, by perceiving our past selves as being inferior to our present selves. The self-function enables the person to select some memories and disregard other, so that this comparison is possible. This way, the self-function is also in charge of self-improvement. Next is the directive function, which allows us to use already existing knowledge of the past in order to solve present and anticipated future problems. It uses knowledge from the past to guide future actions and to help us understand how the world works. Also, it helps us to understand other people based on our own past experiences. The last one is the social function. Its broadest purpose is to make social interactions easier. Knowing more about other people's pasts helps us to understand them better and empathize with them, it makes us more willing to trust them and share our own memories with them. All of this helps with building good relationships with others (Bluck, 2003).

Even though Bluck (2003) says these functions of autobiographical memory are not completely separated in everyday life, she shows that they are at least partly autonomous, which indicates that they can be studied separately (Bluck, 2003). In this research, the focus will be on the self and the directive function. This is because illusion of control, the concept that autobiographical memory is related to in this research, is a cognitive bias. It is mostly based on a person's cognitive processing, and not on the interaction with the social environment. Because of this, the social aspect of the autobiographical memory is not relevant for this research.

The structure of the autobiographical memory can be approached by looking at it as the part of SMS (Self Memory System). This system, besides autobiographical memory, also

contains the working self and the episodic memory (Conway & Loveday, 2015). In this system, autobiographical memory develops from the conflict of two opposite demands, self-coherence and adaptive correspondence, and its primary role is to monitor the process of reaching goals. Self-coherence is tasked with keeping long-term autobiographical memories; it helps with understanding our experience and maintaining self-continuity. Adaptive correspondence, on the other hand, has the task of recording the process of attaining a goal in real time, as it happens And from their opposed tasks, it can be seen why these two demands are opposites, as one is tasked with following what happens only in current point in time so we could successfully reach our goals, where the other has to keep all of our remembered experiences together, so we can keep continued, uninterrupted view of ourselves. In different situations, one of these two demands is more needed (Conway, Singer & Tagini, 2004). Different amount of resources are given to each of these two demands, depending on how necessary they are in a certain moment. If one is in very high demand, the other can be suppressed during that period. For example, if there is a higher need to focus on reaching a certain goal in the moment, adaptive correspondence will be activated, and self-coherence suppressed, so momentarily irrelevant memories do not impede reaching the goal (Conway, Singer & Tagini, 2004).

Illusion of control

The illusion of control (IOC) is the belief that the chances for a person to succeed are much higher than objectively possible. Ellen Langer was the one of the first scientists to study it as a standalone phenomenon, as she noticed that people often do not act differently in situations that require primarily either skill or luck. In situations where outcome is completely dependent on luck, people still often judge that they (their skills) had an effect on the outcome (Langer, 1975). So, in other words, illusion of control refers to the belief that one's own

actions cause the outcome, even if there is no correlation between the actions and the outcome (Matute, Yarritu & Vadillo, 2011).

There are many different conditions that lead to the development of illusion of control. For the purpose of this research, a few are important, including a high probability that the outcome will happen and a high probability of performing the action. If there is a high probability of the outcome happening, illusion of control has high chances of developing, even if a person has no control over the outcome (Blanco & Matute, 2014).

Until recently it was believed that personal involvement with the action was necessary in order for this illusion to develop. It was thought that a person had to perform the action herself in order for the illusion of control to occur. However, there are findings that indicate that this is not the case. This illusion can develop without personal involvement, even in situations when the person is a mere observer, for example if the person listens to the experiences of others (Matute et al., 2011).

Putting aside the conditions that lead to the illusion of control, you can wonder why we would want to increase this illusion. Until a few decades ago, the opinion that all illusions are disadvantageous was widely accepted. The reason for this was that illusions are not objective, they distort our view of the reality. An objective view of the world was considered important and necessary for mental health. However, over the time, research showed that this view might not have been completely correct. In their article, Taylor and Brown (1988) summed up evidence that suggested that some illusions (including illusion of control) can actually be beneficial for mental health. First, they pointed out a great deal of research that showed that illusions are a common occurrence among almost everyone, even healthy people, not just among those with mental problems. Additionally, they present researches that show that the illusion of control is prevalent among mentally healthy people, and that people with depression usually lack this illusion. Lack of illusion of control is common for people that

have low self-esteem and low subjective well-being (Taylor & Brown, 1988). There are more recent researchers that at least partly agree that illusion of control has some positive effects on mental health (Alloy & Clements, 1992; Bates & Stevens, 1989; Cowley, Briley&Farrell, 2015). There are even researches that indicate that illusion of control can have some positive effect on cardiovascular health (Why & Huang, 2011).However, it is important to note that, even though illusion of control can be beneficial, it also has its negative side. For example, it is one of the cognitive processes responsible for developing superstitions and even pseudoscience (Matute et al., 2011).

So, there are two views of the IOC that are completely opposed, one observing it as positive and the other as negative. Still, this is not enough to categorize it as always useful or always harmful, adaptive or not adaptive. Even though it has many negative effects, it also has many positive effects. It is probably the best to observe it as useful in some situation, and harmful in others. Even though sometimes it might be good to lose this illusion, other times it would be better to keep it or increase it. And this is why finding a way to increase it in an everyday situation can be beneficial in everyday life.

Increasing illusion of control

Even though it was shown many times that the illusion of control is a characteristic of cognitive functioning in people without mental problems, and that its shortage characterizes those with mental problems, there are indications that this illusion can also be affected by the situation. For example, results of the research conducted by Alloy and Abramson indicate that IOC can be affected by mood. When their depressed participants had their mood elevated, they showed higher levels of illusion of control. Also, when their non-depressed participants had their mood lowered, they showed a lower illusion of control (Alloy & Abramson, 1981).

Increasing the mood is not the only way to temporarily increase illusion of control. Another technique that can be used accomplish this, as Wohl and Enzle (2009) showed in

their research, is to give control to another person, whom is perceived to be more adequate for dealing with the task. This is called illusion of control by proxy. At first, it might seem contradictory that giving away control to someone else will increase the perception of personal control. But, if this other person is judged to be more capable to deal with the situation than we are, then giving up control and letting them be in charge does seem like a logical solution. In this case, people feel that by willingly giving away control they did the best they could in that situation. An example of this would be giving control to the doctor and letting him take care of our health (Wohl & Enzle, 2009). What this research suggests is not just that illusion of control can be affected and increased by the situation, but that it can also be changed by the person itself and his actions. This result justifies trying to increase illusion of control in present research by using personal memories.

Besides these, there are other factors that can help to increase illusion of control, such as inducing guilt (Kouchaki et al., 2014), as well as increasing the power a person has (Fast et al., 2009). These all suggest that there are many different factors that affect the level of this illusion a person is feeling at the moment, and they warrant the search for different factors that can influence it as well.

Autobiographical memory and threat

So far, there has been a number of research connecting autobiographical memory and threat. However, unlike this one, most of them were conducted on a clinical sample, and they were looking at the correlation between different clinical and emotional disorders and autobiographical memory. One of the results that many researchers agree upon is that numerous clinical disorders are correlated with problems in retrieving specific autobiographical memories - overgeneral autobiographical memory (Brittlebank, Scott, Wiliams & Ferier, 1993; Sansom-Daly, Bryant, Cohn & Wakefield, 2014). Overgeneral autobiographical memory (OGM) is characterized with having a general memory of an event

but having difficulties with remembering more distinctive details (Ono, Devilly & Shum, 2015). One of the disorders commonly linked to OGM is depression. There are strong indications that OGM has an effect on the occurrence, continuation and expansion of depression (Williams et al, 2007).

However, research on OGM conducted on participants without mental health problems shows that, in some situations, OGM can also be useful a coping strategy. Sometimes, when a person is in a threatening situation, OGM can be used as a type of avoidance coping strategy, and help her to deal with a negative situation. If remembering particular event causes significant distress, it can be useful to remember it only generally, without going into specific details, thus minimizing negative emotions and distress that comes with remembering that event (Debeer, Raes & Williams, 2011). This way autobiographical memory protects us from distress, thus works as a buffer against threat.

As previously noted, autobiographical memory has two demands, adaptive correspondence and self-coherence, that are in charge of different tasks. Self-coherence has a long-term focus and is in charge of self-continuity, whereas adaptive correspondence has a short-term focus on the goal a person is currently working on. Since their tasks are opposed, and cognitive capacities that can be given to each are limited, if situation requires, the amount of cognitive capacities given to each demand at certain point in time can vary. One demand that is more useful and needed at a certain moment will receive a bigger share of cognitive capacities. If the process of reaching a currently important goal is threatened, more capacities will be given to adaptive correspondence, and other, in that moment irrelevant memories, will be ignored. If the threat lasts for a longer time, however, it can be perceived as a challenge to self-coherence, and it leads to a search through long term memories in order to find the best solution. This time, more resources will shift to self-coherence (Conway et al., 2004). This shift between demands when reaching the goal is threatened is another indicator that

autobiographical memory can protect against a threat. Thus, this can be seen as an additional argument for inspecting AM as a buffer against threat.

Present research

Since illusion of control means that a person perceives having a level of control higher than she really has, receiving information that contradict it can shatter it. This illusion shows positive correlations with mental health, and a lack of it with different mental health problems, which suggests that losing it can have negative effects on cognitive functioning (Taylor & Brown, 1988; Cowley et al., 2015; Alloy & Clements, 1992; Bates & Stevens, 1989). Having this in mind, we can ask how we can help people increase and maintain this illusion in the face of harsh reality. As previously stated, research results indicate that there are different ways to increase it (Alloy & Abramson, 1981; Wohl & Enzle, 2009; Kouchaki et al., 2014; Fast et al., 2009). On the other hand, there are some indications that autobiographical memory can help buffer against threats (Conway et al., 2004). Having this in mind, we can wonder whether autobiographical memory can buffer against a threat to illusion of control.

One of the demands of the autobiographical memory is self-coherence. It is in charge of keeping long term memories as well as keeping a coherent picture of ourselves. However, this picture is usually favorable, and we see ourselves in better light than we actually are. People with solid self-coherence show higher self-esteem and well-being. Maintaining self-coherence is very important for healthy cognitive functioning. It is so important that sometimes, if there is threat to self-coherence, personal memories get distorted in a way that protects it. A high sense of personal control is part of a coherent view of the self. Conway (2005) reports a case of a patient who was a professional driver, and had a traffic accident. During this accident, he didn't have control over the situation. However, this loss of control affected him so much that he developed false memories of the event, which convinced him

that he actually had the control to stop the accident. So, for this patient, loss of control was so traumatic, that he created false autobiographical memories that helped him increase his illusion of control (Conway, 2005). This case is, to my best knowledge, the only reported instance in which autobiographical memory was used to create an illusion of control, since these two concepts haven't been studied together much. Nonetheless, combined with the previously mentioned researches, it shows that there is a justification in studying these two concepts together, and expanding our knowledge of their relationship. Based on the research so far, it can be predicted that after the illusion of control has been taken away, it will be restored to a higher level if people recall an event in which they were able to take control over the situation, which lead to more successful outcomes than if they recall an event in which they weren't able to take control over the situation, which leads to an unsuccessful outcome. So, the first hypothesis is made:

H1: After illusion of control has been taken away, it will be restored to a higher level if people recall an event in which they were able to take control over the situation which lead to a successful outcome, than if they recall an event in which they weren't able to take control over the situation, which lead to an unsuccessful outcome.

However, events in which people gained control which led to success are generally positive, and events in which people failed to gain control which led to bad outcome are, in general, negative. So, if there is a difference between these two groups, it might be because of the valence of the memories, not because of its control component. These results wouldn't be unexpected, since it was shown that illusion of control can be successfully increased by increasing the mood (Alloy & Abramson, 1981). Also, it is already shown that memories that contain positive feelings help with reaching personal goals, whereas the memories containing negative feelings lead to failure in achieving goals (Conway & Pleydell-Pearce, 2000). Since there is not much research examining autobiographical memory and illusion of control

together, there are not many justifications of why recalling a control-related event would be more successful in increasing illusion of control, than simply recalling a positive event. However, there are some that indicate that this may be the case. Among others, a part of the self-function of autobiographical memory is to provide a favorable view of the self (Bluck, 2003). It can be expected that the self will be judged more favorably if we recall instances where we were successful due to our own efforts, than events that were pleasant, but not necessarily because of our actions. Events that ended positively because we have taken control over the outcome say more about our own abilities than simple enjoyable events that have nothing to do with our abilities. Additionally, self-confidence also includes the perception of personal control (Sedikides & Strube). So recalling positive autobiographical memories can have a positive influence on different functions, such as self-esteem and well-being (Bluck, 2003). However, the illusion of control is so important for self-coherence, that some people would be ready to develop a mental illness in order to preserve it (Conway, 2005). Some even believe it is one of human's primary needs (Lorenz et al., 2015). Also, it has a positive correlation with self-esteem and well-being (Taylor & Brown, 1988). So, it is expected that after illusion of control has been taken away, it will be restored to a higher level if people recall event in which they were able to take control over the situation which lead to a successful outcome, than if they recalled a positive, but not control related event. So, the second and third hypotheses are made:

H2: After illusion of control has been taken away, it will be restored to a higher level if people recall an event in which they were able to take control over the situation which lead to a successful outcome, than if they recalled a positive, but not control related event.

H3: After illusion of control has been taken away, it will be restored to a higher level if people recall a positive, but not control related event, than if they recall an event in which they weren't able to take control over the situation, which lead to an unsuccessful outcome.

Method - Study 1

Participants

Participants for study 1 were recruited online, via social networks and e-mail. There were 29 participants in the study, 9 of them male (31%) and 16 female (55.2%). Four participants did not report their gender. Participants were between the ages of 19 and 76, M_{age}=35.33 years. Five participants did not report their age. Research was conducted in the Serbian language. This is why participants were from Serbia, or of Serbian origin but living abroad. Also, participants from surrounding countries (Bosnia, Croatia, Montenegro), which have a language and culture similar to Serbian, were accepted. They are able to understand the language and cultural differences are not significant enough to influence the results. The condition for participating was for participants to be over 18, to not have any mental health problems, and to understand and write in the Serbian language.

Design

This study 1 used a within-subjects design. The independent variable is the illusion of control threat. There are 3 dependent variables – well-being, self-esteem and the level of illusion of control. The independent variable has only one level, since the goal of the study 1 was to test whether there is a change in illusion of control levels before and after implementing the threat. Each participant was given two groups of 3 tests, the first one before, and the second one after introducing the illusion of control threat. Each test in the first group had its pair in the second. Tests in the second group were, actually, second versions of the tests used in the first group of tests. Averages on the two versions of each test were compared, in order to see if there was the significant change in levels of the illusion of control before and after implementing the threat. Study 1 was conducted in order to see if the illusion of control threat worked as expected, so it could be used in study 2.

Materials

      Illusion of control threat. It consists of two texts and a task (Appendix A), and its purpose is to lower participant's illusion of control. However, in order for it to be lowered, it was necessary to make sure participant had a high level of IOC in that moment. That is why the first part of this task is designed to increase IOC, and the second to lower it.

      The first part of this task consists of a text and a question. The text describes an illness called Lindon syndrome, and two medicines that were used to cure it. The data suggests that the medicine A is much more effective over three trials than the medicine B. This is why it is assumed that, when asked later, most of the participants will judge the medicine A to be more effective.

      The first text was based on the facts that IOC is more likely to occur if there is high probability that outcome will occur (Blanco &Matute, 2014). Also, chances for developing the illusion of control increase if a certain outcome happens repeatedly (Matute et al, 2011). In the text, it was made to seem that one of the actions (taking medicine A) leads to a desired outcome (getting cured), and that the other one (taking medicine B) doesn't have an effect on the outcome. Since the desired outcome (getting cured) is more probable to happen in the first situation (medicine A), it is expected that participants will develop illusion of control for this situation – they will believe that medicine A cures the disease. This will further be supported by the fact that this outcome occurs multiple times, over 3 described trials.

      For IOC to develop, it is not necessary for the individual to be personally involved in the event. It can develop even if a person is an observer of an event (Matute et al, 2011), which is the case here. Furthermore, development of IOC can be increased or decreased by the way in which the question is formulated. Asking participants to think in a causal way will make them more aware that there is no correlation between behavior and outcome. It is because this way of thinking leads to a better estimation of probability. However, if

participants are asked about the effectiveness and not the causation, chances for the illusion of control to be decreased are lower (Matute et al, 2011). This is why the question that participants were asked was 'Which of the two medicines, A or B, do you think is more effective in curing the disease?'

After the IOC was increased by the first text and the question, the second text was presented, in order to take it away. The second text claimed that none of the medicines is actually effective, and that cured patients were a statistical anomaly. This study was conducted to test whether this experimental procedure can be used to lower the illusion of control, so it can later be used in study 2. This threat manipulation was based on the allergy task (Matute et al, 2011).

Rosenberg Self-Esteem Scale (RSES). Higher levels of self-esteem show a positive correlation with higher levels of the illusion of control (Taylor & Brown, 1988). This is why a measure of self-esteem was used in this research. The Rosenberg Self-Esteem Scale is used to assess a person's general level of self-esteem (Kaduvettoor-Davidson & Inman, 2013). Participants are presented with 10 items, with the instruction to mark to what level they agree with each of them, in that very moment. This is done on the 4-point Likert scale, ranging from *strongly disagree* (1) to *strongly agree* (4). Five items are positively worded, and 5 negatively worded. In this research, the Serbian version of RSES was used (Appendix B). In this version, the internal reliability is α=.82 (Popov, 2013).

For the purpose of this research, two versions of the scale were created. First, existing items were used in order to make new items. These new items had the same content as the existing ones, but the opposite valence. For example, out of the item *'I take a positive attitude toward myself'*, the item '*I take a negative attitude toward myself*' was made. After this was done, there were two versions of the scale, the original one, and one with the same content, but of the opposite valence. Afterwards, items from these two scales were mixed, so there was

roughly the same number of the old and new items in each scale, and the same number of positive and negative items in each scale, so these factors would not affect participant's responses. At the end, the first version of the scale had 4 items from the original and 6 items from the new version, and it had 5 negatively and 5 positively worded items (Appendix C). The second version of the scale had 6 items from the original scale and 4 items from the new version, 5 positively worded and 5 negatively worded items (Appendix D).

Satisfaction With Life Scale (SWLS). The illusion of control shows a positive correlation with subjective well-being (Taylor & Brown, 1988). For this reason, SWLS was used in this research (Appendix E). SWLS is used to measure a person's own global satisfaction with her life. This is regarded as a cognitive aspect of well-being (Pavot & Diener, 1993). SWLS consists of 5 items, and participants mark how much they agree with each of them on a 7-point Likert scale, ranging from *strongly disagree* (1) to *strongly agree* (7). All of the items are positively worded. For this research, the Croatian version of the scale was used. Internal consistency of the scale is α=.87, and reliability is α=.82 (Vidiček, Sindik & Vukosav, 2014). Since the Serbian and Croatian language functionally differ only in dialect, only the dialect was changed and adapted to the Serbian language.

First, two versions of this scale were made, using the same procedure as described for the RSES. First, there were items made with the same content as existing ones, but with the opposite valence. For example, the item '*I am satisfied with my life'* was transformed into the item *'I am not satisfied with my life'.* After this, two versions of the scale, the standard one with positively worded items, and the new one with negatively worded items, were mixed, and two new scales were made. The first new scale has 5 items, 3 from the original scale and positively worded, and 2 from the new scale and negatively worded (Appendix F). The second new scale also has 5 items, 2 of them from the original scale and positively worded, and 3 from the new scale and negatively worded (Appendix G).

Illusion of control measure. The IOC measure implemented in this research was adapted from the article by Fast et al (2009). Authors used the questionnaire in which they asked participants to evaluate their competence to control 5 situations that are objectively difficult to control (Appendix H). Participants marked their estimated control on 7-point scale, ranging from *very little control* (1) to *a great deal of control* (7) (Fast et al., 2009).

A new version of the questionnaire was made out of the existing one. Since all of the items are in the form of a question, a new form was made by making the questions into statements. For example, the question '*How much control do you have over what happens at your place of work?*' was transformed into '*I have control over what happens in my work place.*' After finishing, there were 2 version of the IOC measure. The first one had 5 items, 3 from the original scale and in form of the questions, and 2 in form of the statements and from the newly made scale (Appendix I). The second scale also had 5 items, 2 from the old version of the questionnaire and in the form of the questions, and 3 from the newly made scale and in the form of statements (Appendix J). After this, both version of the scale were translated into Serbian by the author, and then back into English by a translator blind to the hypothesis.

Line Bisection Task (LBT). LBT was used as a filler task. It consists of 19 straight horizontal lines that were presented one after another, each with a slider on it. The goal of the task was to move the slider to the approximated centre of the line. It was used as a cognitive break, so participants have intermission between 2 groups of the questionnaires. This is an unobtrusive task.

Procedure

Participants completed study 1 online, in Qualtrics online survey program. Participation in the survey was voluntary. Participants were recruited via social networks (mainly Facebook) and e-mail. The survey started on April 4th 2015 and finished on April 6th 2015. Participants were provided with a general explanation of the study in the introduction

text (Appendix K) at the very beginning of the study, and with a more detailed explanation in the debriefing part of the study (Appendix L) after they have finished the study. Both texts were translated to Serbian by the author, and then back translated by a translator who was blind to the hypothesis.

First, demographic variables (age and gender) were collected. Then, the first versions of the Rosenberg Self-Esteem Scale, Satisfaction With Life Scale, and the Illusion of control measure were given. After that, participants completed the filler task – Line Bisection Task. Then, they filled in the second versions of the Rosenberg Self-Esteem Scale, Satisfaction With Life Scale, and the Illusion of control measure, in the same order of the questionnaires as in the previous block. Afterwards, they were presented with the debriefing text.

Results - Study 1

The number of the people that thought medicine A was effective in curing the disease was checked. Out of 29 participants, 22 (75.9%) thought medicine A was more effective. Two participants (6.9%) thought that medicine B was more effective, and 5 participants (17.2%) chose the option "*I don't know*".

Before the statistical analysis was performed, some of the variables were recoded. Since the new versions of RSES and SWLS had both negatively and positively worded items, negatively worded items were re-coded, so all of the items have the same valence, and comparison is possible. Afterwards, means were calculated for each test (Table 1). Paired sample t-test was used in the analysis of the results (Table 2).

Table 1

Tests means

Test	M	SD	n
RSES 1	3.25	0.58	27
RSES 2	2.78	0.61	27
SWLS 1	4.66	1.08	28
SWLS 2	3.56	1.03	28
IOC measure 1	2.69	1.19	28
IOC measure 2	1.86	0.87	28

Table 2

Results of pared samples t-test

Test pair	t	df	Sig. (2-tailed)
RSES 1 – RSES 2	3.039	26	.005
SWLS 1 – SWLS 2	4.136	27	.000
IOC 1 – IOC 2	3.913	27	.001

As it can be seen from the results, there were statistically significant differences between each test pair. All of the differences were significant on the level $p \leq .005$.

Study 1 was conducted in order to check whether the illusion of control threat was really successful in lowering the illusion's levels. First, most of the participants (75.9%) thought that medicine A was more efficient than medicine B. This points to a conclusion that most of the participants did develop the illusion of control based on the first text.

As the results of study 1 show, there is a statistically significant difference between each pair of tests, on the level $p \leq .005$. Also, the means were higher in the first measure (before implementing the threat), than in the second one for each test pair (Table 1). This means that participants showed higher levels of the illusion of control, self-esteem and well-being before the threat was implemented. This indicates that the second part of the threat, one made in order to lower the illusion, was successful as well. In sum, the results of study 1 show that the illusion of control threat was successful in lowering levels of the illusion. This means that the threat can be used in study 2.

Method - Study 2

Participants

There were 461 people who opened the research link. However, after excluding participants that did not completed the memory recollection task, and those whose recalled memories did not fit the coding criteria, 179 participants were left in the research. Out of that, 48 were male (26.8%) and 131 female (73.2%). They were between ages of 19 and 57, M_{age}=31.68 years. One participant did not reporting his age. As in study 1, conditions for participating in the research were that the person can understand and write Serbian, is older than 18 years and belongs to the normal population. This again made people from Serbia, as well as from different countries that share very similar languages and cultures, eligible for participating. There were 49 (27.4%) participants in the first condition, 59 (33%) in the second, and 71 (39.7%) in the third.

Design

Study 2 uses a between-subject design. The independent variable is categorical and has 3 conditions. There are 3 dependent variables – self-esteem, cognitive and affective wellbeing. The dependent variables were selected because they present concepts that were previously shown to have positive correlation with the illusion of control (Taylor & Brown, 1988), so a difference between the conditions in these concepts indicates differences in level of IOC. This correlation was also confirmed in study 1 of this research. However, these concepts still do not measure illusion of control directly. This is why three and not just one instrument were used in order to test the hypothesis.

Independent variable. The independent variable is autobiographical memory recollection, and it has 3 conditions. Participants were randomly distributed to the conditions.

In the *first condition* (named *positive AM* condition), participants were asked to recall an autobiographical memory of an event in which they were able to gain control over the situation using their own efforts, which led to a positive outcome of that situation.

In the *second condition* (named *negative AM* condition), participants were asked to recall an autobiographical memory of a situation in which they were not able to gain control over the situation, which led to a negative outcome of that situation.

The *third condition* (named *control* condition*)* was the control condition. Participants were asked to recall a positive event from their lives. This condition was added in order to test if potential differences between the first two conditions occurred because of the control component of the memories, or because of the valence of the memories.

The first (positive AM) and the second (negative AM) condition were designed in order to check whether the control component of the recalled AM plays a role in increasing the IOC. This is why in the positive AM condition participants were asked to recall having control, and in the negative AM condition not having it. However, they also differ on the

required ending of the event. In the negative AM condition, participants could have been asked to recall an event that ended successfully, despite them not having control. However, in that case, the successful ending might have served as some kind of coping strategy, making up for not being able to gain control. In order for this not to happen, the success-related aspect of the event was included. But, now these two conditions differed in the 2 characteristics – control and success. Due to the success component the first condition was generally positive, and the second one generally negative. So, if changes in the IOC levels did occur, it might have been due to the valence of the recalled events, because IOC can be increased with the mood (Alloy & Abramson, 1981). This is why the third condition, the control condition, was introduced. This event had a positive valence, but not a control component. This way, if the control component of the event is indeed relevant for increasing the IOC, there should be a significant difference between the positive AM condition and the control condition. However, if only the mood-increasing characteristics of the AM were relevant, a difference between positive AM and control condition is not expected.

Confounding variables. Gender is the first confounding variable, since research shows gender differences in AM recollection styles (Pillerman, Wink, DiDonato & Sanborn, 2003).Another possible confounding variable is age, since research shows differences in recalling autobiographical memories depending on the participant's age (Schlagman, Kliegel, Schulz & Kvavilashvili, 2009).

Materials

Illusion of control threat and autobiographical memory recollection task.IOC threat (Appendix A) was first tested in the study 1, in order to check if it was successful in lowering the illusion of control. This was showed to be the case, so this threat was used in study 2 as well. The threat is described in detail within the materials used in study 1.

After the IOC threat, participants were given the autobiographical memory recollection task. This task has 3 different conditions (described under the independent variable section), and each participant was randomly distributed to one of them. For the research the instructions were translated into the Serbian language by the author, and back translated to English language by a translator blind to the hypothesis. Participants were given the instructions in the Serbian language. They were asked to type in the memory they have recalled.

In the first (positive AM) condition, participants received the following instruction "*Remember an event from your life in which you were able to gain control over the situation, which led to the positive outcome of that situation. This should be an event in which you were able to gain control because of your own efforts. Briefly describe this event. Provide some details, such as: when and where this happened, context of the situation, who you were with... Mention every aspect of the situation you can remember. Describe this event in a way so it would be understandable to other person. There are no right or wrong answers – what matters is your personal experience. There is no time limit, but it usually takes people between 5 and 10 minutes to finish this task.* "

In the second (negative AM) condition, participants received the following instruction: ' *'Remember an event from your life in which you didn't have control over the situation, which led to the negative outcome of that situation. Briefly describe this event. Provide some details, such as: when and where this happened, context of the situation, who you were with... Mention every aspect of the situation you can remember. Describe this event in a way so it would be understandable to other person. There are no right or wrong answers – what matters is your personal experience. There is no time limit, but it usually takes people between 5 and 10 minutes to finish this task.*''

In the control condition, the instruction was: "*Remember a positive event from your life. Briefly describe this event. Provide some details, such as: when and where this happened, context of the situation, who you were with... Mention every aspect of the situation you can remember. Describe this event in a way so it would be understandable to other person. There are no right or wrong answers – what matters is your personal experience. There is no time limit, but it usually takes people between 5 and 10 minutes to finish this task.*"

In order to check whether the recalled memory fitted the instruction, a coding procedure was implemented.

Memory Characteristics Questionnaire (MCQ). This instrument consists of questions related to different aspects of the recalled memory, thus providing more information about the memory. The original version of this questionnaire consists of 39 items (Johnson, Foley, Suengas & Raye, 1988). However, in order to reduce the time needed to complete this research, only 12 items were selected. These items refer to different characteristics of the recalled memories, and participants mark on 7-point scale how much they agree with each. The questionnaire was translated to Serbian by the author, and then back-translated by a translator blind to the hypothesis (Appendix M).

Rosenberg Self-Esteem Scale (RSES). In the study 1, there were statistically significant differences in the RSES results before and after implementing the illusion of control threat. For this reason, this questionnaire was again used in the study 2. The questionnaire is described in detail in the method section of the study 1. However, in study 2, only the original version of RSES was used (Appendix B)

Satisfaction With Life Scale (SWLS). There were significant differences in SWLS scores before and after lowering the IOC in study 1. Thus, this scale was used again in study

2. Only the original version of the scale was used (Appendix E). This questionnaire is also described in detail in the method section of study 1.

Positive and Negative Affect Schedule-X (PANAS-X). This instrument measures people's positive and negative affect, based on their own assessment (Cotigă, 2012). This is a scale that measures affective well-being (Pavot & Diener, 1993). PANAS-X consists of 20 items, 10 words describing positive emotions, and 10 describing negative emotions (Tsaousis, Nikolaou, Serdaris & Judge, 2007). Participants are asked to mark to what extent they experience each of those 20 emotions in that very moment, ranging from 1 (*very little or not at all*) to 5 (*exceptionally, very*). This was done by typing the corresponding number next to the word. In this research, the Serbian version of the scale was used (Appendix N). Reliability of the positive affect subscale for Serbian participants is α=.85, and of the negative affect subscale it is α=.83. (Popov, 2013)

Procedure

The research was conducted using Qualtrics online survey program. First, participants were shown the introduction text (Appendix O), which consisted of a brief description of the study's purpose, information about the anonymity of the participants, and information that participation is completely voluntary and that they can stop at any time. After that, demographic variables were collected: age, gender, number of younger and older siblings, and the mother's and father's job in the first 8 years of the participant's life. Next, the Illusion of control threat was shown. After that, participants were randomly distributed in one of the 3 groups for the autobiographical memory recollection task. After finishing, they filled in the Memory Characteristics Questionnaire, then the Rosenberg Self-Esteem Scale, after that PANAS-X, and then the Satisfaction With Life Scale. Afterwards, participants were asked if at any moment they anticipated what the topic of the research is. After this, they were presented the debriefing text, which consists of a more detailed explanation of the study, as

well as the plea not to discuss the subject of the study with potential future participants (Appendix P).

Coding recalled memories

First, all of the texts were organized. This was done by rewriting text typed in Cyrillic alphabet into Latin alphabet. Serbian language has two alphabets – Cyrillic and Latin. Since it is a phonetic language, there is no difference between these two alphabets. They have the same number of letters, and exactly the same letters. Only difference is the shape (look) of the letters. However, since many programs do not recognize Cyrillic letters, it was more convenient to have all of the memories in the Latin alphabet. Texts were retyped word-by-word, exactly as participants wrote them down. Additionally, Serbian has additional letters (č, ć, š, đ, ž, nj, lj), that the English alphabet does not have. These letters were not always recognized by the Qualtrics program, in which the research was conducted. Qualtric replaced them with different symbols. Before the coding procedure, in order to make it simpler, these symbols were replaced with their corresponding letters.

After this, the coding procedure began. Coding was conducted by the two coders. One was the author, and the second one was an independent coder, blind to the research hypothesis. The coding procedure was conducted in Microsoft Word 2007 program. Before the coding procedure both coders received coding instructions, but did not discuss it. Instructions included tables with words (Appendix Q). Tables were made using Thesaurus online dictionary (http://www.thesaurus.com/). Since this website is in English, words and phrases were translated into Serbian. English language website was used since a search did not produce its equivalent in the Serbian language. There were 6 categories of words – positive, negative, control-related, losing control-related, success-related and failure related words and phrases. Categories were based on instructions participants received for the memory recollection task. For example, in the positive AM condition, participants were asked

for events in which they gained control, which lead to a positive outcome. The way in which recollection instructions were made is based on the existing research, and previously explained in both introduction and method section.

 After the procedure was finished, recalled memories that were marked as appropriate (fitting the criteria) by both coders were accepted, and those that were marked as inappropriate were discarded. There were a few memories of which one or both coders were not sure whether they fit the criteria or not. These memories were discussed by the coders together, and it was decided whether they will be used in the further research or not.

The first step in the coding procedure was finding words from the tables in the AM recollection texts. Tables included more words for each category than there were in the recollections, so not every word from the tables appeared in the texts. While searching for words, coders paid attention to look for different dialect and word forms. After a certain word was found, it was painted in the color corresponding to its category, for example green for positive, red for negative. This was done so the following step in the coding procedure would be easier to perform. There were certain words that fitted more than one category (for example a positive word and a success word). These words were double marked, and counted for all of the categories they fitted. This was done because if each word was counted in just one category, than some word in the categories might be lacking and memories would be deemed inadequate, even though that is not the case. For example, the word 'success' is, of course, in the success-related word category. However, it is also positive word, and adding it only to one of these two categories would artificially lower the word count in the other.

In the next step, coders received the expected ratio of each word category for every condition. For the positive AM condition, the expected ratio was more positive than negative words, more words related to managing to achieve the control that to failing to do so, and more words related to success than to failure. For the negative AM condition memories were

accepted if they had more negative than positive words, more words related to losing control than to gaining it, and more words related to failing than to success. In the control condition, control and success were not important factors. This is why in this condition memories were accepted if there were, in total, more positive than negative words. However, even though control and success related memories were not a requirement in this condition, recalling them was not a mistake, since they are still positive words. This is why here control and success related words were put in the positive word category, and losing control and failure related words in the negative words category.

At the end, it was coded whether there was a change in the outcome of the text. This was done in the case that the person started describing, for example, a negative event that ended positive since she was able to gain the control. This event would fit the criteria, but if the outcome change was not accounted for, it might not have seem so, since in this kind of outcome description, negative words might have a higher number than positive words. For the first and third condition, the appropriate change was from negative to positive and for the second condition, from positive to negative.

There were some recalled memories that did not fit these criteria. Some of them were not following the instructions, and were discarded. However, some used unusual, rarely used words, which were not predicted by the coding system. In the case of these memories, coders discussed them together, and decided whether context fits the criteria or not.

Results - Study 2

First it was checked how many participants choose medicine A to be the most effective. There were 158 (88.3%) of them that thought medicine A was the most effective, 5 (2.8%) that thought the medicine B was more effective, and 16 (8.9%) that picked the option "*I don't know*". A high percentage of participants that picked the medicine A indicates that the threat was successful.

Three one-way analysis of covariance were conducted, in order to test the difference between the different conditions of the independent variable on self-esteem (first analysis), cognitive (second analysis) and affective well-being (third analysis), when controlling for the effects of age and gender. Three separate analyses were conducted since each of these questionnaires is observed as a measure independent from other two. There was one statistically significant result – the condition participants belonged to was a significant predictor of their scores on the PANAS-X (affective well-being scale), when controlled for age and gender (F (2, 170) = 6.129,p= .003). However, the experimental group was not a significant predictor for other instruments, for SWLS F (2, 171) = 1.138, $p = .323$; for RSES F (2, 172) = 1.641, $p = .197$.

Pair wise comparisons shows which group differences measured with PANAS-X were significant (Table 3). PANAS-X registered significant differences between the positive AM condition, and the negative AM condition, $p < .01$, as well as between the control condition and the negative AM condition , $p<.05$. However, difference between the positive AM condition and the control condition is not significant, $p > .05$.

Table 3

Pairwise comparison for PANAS-X scale

Compared conditions		*Mean difference*	
Condition A	*Condition B*	*(A-B)*	*Sig*
Positive AM	Negative AM	8.157[*]	.006
Positive AM	Control condition	1.377	1.000
Control condition	Negative AM	6.780[*]	.013

If we look at the means (Table 4), we get additional information. Levels of the affective well-being will be different depending on whether a person recalled an event in which she gained control, lost control, or a positive but not-control related event. In the negative AM condition, the levels of affective well-being were the lowest. So, in the two positive recollection tasks, levels of the affective well-being were restored to significantly higher levels than in the negative recollection task. Since the levels of well-being are positively correlated with levels of IOC (Taylor & Brown, 1988), these results are agreeing with hypothesis 1 and 3.

Table 4

Means and standard deviations of affective well-being between three conditions of the independent variable

condition	M	SD	N
Positive AM	78.42	11.53	48
Negative AM	69.42	15.56	57
Control condition	76.87	12.06	70
total	74.87	13.65	175

Results support hypothesis 1:*After illusion of control has been taken away, it will be restored to a higher level if people recall an event in which they were able to take control over the situation which lead to a successful outcome, than if they recall an event in which they weren't able to take control over the situation, which lead to an unsuccessful outcome.* Also, they support hypothesis 3: *After illusion of control has been taken away, it will be restored to a higher level if people recall positive, but not control related event, than if they*

recall an event in which they weren't able to take control over the situation, which lead to an unsuccessful outcome. However, hypothesis 2: *After illusion of control has been taken away, it will be restored to a higher level if people recall an event in which they were able to take control over the situation, which lead to a successful outcome than if they recalled a positive, but not control related event,* is not confirmed.

The results show that, in this research, no significant difference was found in the levels of the IOC between recalling an only positive event and a positive control related event. However, significant differences were found between the two positive events and one negative event. This means that control characteristics of the AM are not relevant for increasing illusion of control. What was relevant was the valence of the memory.

There is, however, one thing about the result that should be mentioned. Levene's test results are significant for the PANAS-X scale (p < .005) and the RSES scale (p < .01). However, Hartley's F_{max} test for each scale is under the critical value, which shows that parametric test can still be performed. The ratio of the variance of the larger group is bigger than the ratio of the variance of the smaller group less than 2 times for each test. For PANAS-X F_{max}= 1.79, p> .05, for RSES F_{max} = 1.63, p> .05 and for SWLS F_{max}= 1.27, p> .05 (Field, 2013). Furthermore, applying the outlier labeling rule (Hoaglin& Iglewicz, 1987) did not show outliers for any of the used questionnaires.

At the end of the study, participants were asked if they guessed what the purpose of the study was while they were filling it in. None of the participants guessed the exact purpose of the study. Most participants guessed the study was either about the memory (which was what they were told in the introduction text), or about emotions and experiences (which was part of the instructions). There were also more specific guesses, for example that it was about negative experiences or specific decisions. These were probably influenced by the specific instructions. However, none of them guessed the exact topic of the study.

Characteristics of the recalled memories

After the analysis was conducted, the specific characteristics of the recalled memories were examined. As stated previously, participants were given theMemory Characteristics Questionnaire, which asked them to access different characteristics of recalled memories. The questions in this questionnaire asked for different AM characteristics, some of which are: clarity of the memory, number of specific details the person remembers, the perceived length of the event, the general valence of the memory, the person's feelings during the event, the feelings in the moment of recollection, and how long ago the event happened. All of these characteristics were separately compared between the three conditions.

A one way ANOVA was used to test differences between the three experimental groups for each of these questions. A separate analysis was used for each question, since each question asked about the different, unique characteristic of the recalled memory. There were 5 statistical differences found. They were for the following questions:

Question A - how sketchy/detailed the memory is (F (2, 173) = 3.751, p = .025),

Question B - how confusing/comprehensible order of the events is (F (2, 174) = 4.452, p= .013),

Question C - how positive/negative overall tone of the memory is (F (2, 171) = 87.723,p= .000),

Question D - valence of the emotions during the events occurrence (F (2, 171) = 157.623,p= .000),

Question E - intensity of the feelings during the recollection (F (2, 175) = 6.327,p= .002).

These differences were only significant between certain conditions for each question. A Tukey post-hoc test revealed which group differences were and which were not significant for each question (Table 5).

Table 5

Group differences for the Memory Characteristics Questionnaire

question	Compared conditions	Mean difference	Sig.
A	Positive AM – Negative AM	.637	.029
	Positive AM – Control condition	.164	.773
	Control condition - Negative AM	.473	.097
B	Positive AM – Negative AM	.706	.021
	Positive AM – Control condition	.120	.883
	Control condition - Negative AM	.586	.041
C	Positive AM – Negative AM	2.810	.000
	Positive AM – Control condition	-.776	.024
	Control condition - Negative AM	3.587	.000
D	Positive AM – Negative AM	3.121	.000
	Positive AM – Control condition	-1.560	.000
	Control condition - Negative AM	4.680	.000
E	Positive AM – Negative AM	.390	.392
	Positive AM – Control condition	-.569	.120
	Control condition - Negative AM	.960	.002

As it can be seen from the results, the most significant difference is for question D,

regarding valence of the emotions during the time event was happening. The highest score,

marking the most positive memory, was for the control condition ($M = 6.43$, $SD = 1.118$),

then for the positive AM condition ($M = 4.88$, $SD = 2.130$), and the lowest for the negative

AM condition ($M = 1.75$, $SD = 1.184$). All of the differences were statistically significant

(Table 5). The next significant results were for question C, how positive/negative the overall

tone of the memory is. Again, all the differences between groups were statistically significant,

for the control condition ($M = 6.46$, $SD = .917$), for the positive AM condition ($M = 5.69$, SD

$= 1.639$), for the negative AM condition ($M = 2.88$, $SD = 2.036$). Again, the highest score

marks the most positive memory.

For the following 3 questions, not all of the differences between groups were

statistically significant. For question A (how sketchy/detailed the memory is), the only

significant difference was between positive AM ($M = 6.06$, $SD = 1.162$) and negative AM

conditions ($M = 5.42$, $SD = 1.404$), where control condition ($M = 5.90$, $SD = 1.248$) did not

have significant differences with any other group. The highest score was for the most detailed

memory. For the question B (how confusing/comprehensible order of the events is),

significant differences were between conditions positive AM ($M = 6.27$, $SD = 1.056$) and

negative AM ($M = 5.56$, $SD = 1.745$), as well as between negative AM and control ($M = 6.14$,

$SD = 1.141$). The highest score was for the most comprehensible order of the events. And, for

the question E (the intensity of the feelings during the recollection) significant differences

were for the groups control condition ($M = 5.67$, $SD = 1.370$) and negative AM ($M = 4.71$, SD

$= 1.554$), and group positive AM did not show any significant differences ($M = 5.10$, SD

$= 1.747$). The highest score here was for the most intense feelings.

Discussion

The purpose of this study was to check whether autobiographical memory can act as a buffer against a threat to illusion of control. In order to check this, three hypotheses were made. Since the measures (questionnaires) used were indirect, three of them were used. This way, if some of the measures were not adequate to catch the difference between groups, there were other two to fall back on.

Results supported the first and third hypothesis, but not the second one. They support it for one of the three questionnaires used (PANAS-X). With others questionnaires, no significant differences were found. This suggests that if the illusion of control is taken away, recalling either a control related event or simply a positive event should restore it to a higher level than if a person recalls an event in which they lost control. However, results suggest that there is no significant difference in levels of the IOC restored between recalling a control related event and a simply positive event. It seems that both would be equally useful in restoring the illusion of control. Still, autobiographical memory recollection was a useful protection against losing the illusion of control. But, it seems that this can be done indirectly, and not in the manner predicted by this research. It seems that AM can be used as a way to increase the current mood, which, in turn, can increase the IOC. However, the control related aspect of the AM was not shown to have a significant effect. Only its valence was significant.

The confirmed hypotheses also suggest that there is a relationship between AM and IOC. This is an idea that can implicitly be concluded from a number of existing researches, but has almost not been explicitly researched at all. Actually, to my best knowledge, there only was one case study that actually put these two concepts together (Conway, 2005). However, this research did not find a direct relationship between these two concepts, nor one that goes beyond mood effect, which should be taken into consideration when interpreting their relationship. This also suggests that further research is needed.

But, why were only two hypothesis confirmed, but not the third one? One possible explanation is that only the valence of the AM is crucial, and not its control component. Thus, positive recalled events increased the IOC compared to negative recalled events. However, since positive AM and control conditions both ask for positive memories, there were no significant differences between them. This conclusion would be similar to the findings from Alloy and Abramson, who were able to increase the levels of the IOC in depressed patients by increasing their mood (Alloy & Abramson, 1981). As stated in the introduction section of this paper, this result is very plausible. This conclusion might have been further confirmed by the participant's own view of their memories, as captured by the Memory Characteristic Questionnaire. In it, memories from the control condition were rated as the most positive. This was the case for their overall tone and for the feelings while the memories were happening. For both, there were significant differences between the three conditions, with the control condition scores being the highest and the negative AM condition scores the lowest. Clearly, participant's feelings were the most negative for an event in which they did not have control or success. The probable reason for this is understandable – participants asked to remember negative events were the saddest. A possible reason for the highest scores in the control condition is because participants remembered completely positive events. In the positive AM condition, events did have control and success components, but often they started negatively and ended positively. These were memories of the events that developed from bad and unfortunate circumstances. People described how they overcame these circumstances, such as illness, death of a close person, personal failure and other. The hypotheses predicted that participants will find the fact that they were able to rise above the circumstances and take the control extra rewarding. But, it might be that participants focused on all of the circumstances surrounding the event, not just the positive endings. Even though taking the control was the focus of this research, for participants it might have been only a

small part of the memory, overshadowed by the preceding negative events. The positive AM condition was also judged as the most detailed remembered and having the most comprehensive order of events. This can suggest that indeed participants focused more on the different aspect of the events, possibly also the negative ones. On the other hand, in the control condition participants only focused on the positive, which might be the reason for these memories being judged as the most positive. Also, one important thing that needs to be mentioned is that there is a big difference in the number of participants between the conditions, which could have also affected the results. All of these factors are not allowing us to make a final conclusion on whether the second hypothesis is really incorrect. It was not proven here, but completely discarding it requires more data, and is beyond the scope of this research.

Also, it is important to note that, even though results of study 2 confirmed hypotheses 1 and 3, it was only for one of the three used questionnaires. What can be the reason for the fact that the only significant result was on the PANAS-X scale? There are many possible reasons for this. Looking at the scales might suggest an answer.

The SWLS scale measures the cognitive component of well-being. Looking at the items shows that they measure more general attitude towards oneself. A study of the scale shows that it measures characteristics that are more or less stable over time (Pavot & Diener, 1993). It might be that these characteristics are stable enough not to be affected much by the threat implemented here. Also, the scale is not directly related to control, and it might be too general to capture the differences in the IOC levels. Also, instructions for both RSES and PANAS-X ask participants to state how they feel in that very moment. However, the instruction for SWLS does not specify that. So, SWLS measures more general attitudes, compared to other two scales, and does not require focus on that very moment in time. This all might be the reason for SWLS to less sensitive to the threat. However, SWLS results were

significantly lower after implementing the threat in study 1. It is difficult to say why there were significant results in study 1, but not in study 2. Further research is needed to explain the difference. However, there is one possible explanation – time passed between filling in the SWLS scale in study 1 and study 2. In study 1 there was just one questionnaire between the memory recollection and SWLS. On the other hand, in study 2 participants needed to fill in three questionnaires between the memory recollection and SWLS. The first questionnaire (MCQ) was directly related to the memory, but other two were not (RSES and PANAS-X); they were related to person's inner feelings and states. It might be that filling in other questionnaires gave a person enough time to recover from the threat and return to the baseline. Also, when the person reached SWLS, it may be that her focus was shifted from how she felt in that very moment, to a more general attitude toward herself. This might also helped her to recover and distance herself from the threat situation. However, this is just a hypothetical explanation of the results. It is difficult to be sure whether this is the case based on the present research. Also, it is important to keep in mind low number of the participants in study 1, which can be alternative reason for the difference between the studies. More research is needed to check if this is the case.

Next, looking at the RSES scale can also suggest possible reasons for the non-significant results. The instruction for the scale does say to state how a person feels at that very moment, and it also has items that seem to be related to less general attitudes than those of SWLS. However, these items still measure moderately lasting attitudes towards oneself, especially compared to PANAS-X. Similar to SWLS, they are also not related to control. Also, same as for the SWLS, the time that passed between the threat and filling in the questionnaire is also longer in study 2 than in study 1, which can explain difference in results that exist here as well. The difference between group sizes should also be taken into consideration here. Same as for the previous scale, more research is needed here.

It seems that the PANAS-X is the most direct measure of how the person feels at that moment. Its items only state positive and negative feelings, and do not seem to carry a person's judgment toward herself. It is still not related to control, same as the other two questionnaires, but unlike the other two, it is not related to more general concepts either. And this might be the reason why PANAS-X had the most significant results in study 2.

It is difficult to say why only one of the three used questionnaires registered the difference between the conditions. However, it is important to remember that these are still indirect measures of the illusion of control. They were used because literature search has not suggested a commonly used and detail methodologically tested IOC questionnaire. The IOC is the most often measured via experimental procedures, usually in the psychological laboratories (Langer, 1975; Blanco & Matute, 2014). However, due to time limitations, this was not possible in this study. Also, as literature shows, if authors in this area do use questionnaires, they often produce them themselves for their particular research. So, their psychometrical characteristics have not been tested and confirmed in multiple researches. This is why I considered it would be safer to measure the IOC through the concepts it is correlated with, and for which there are reliable instruments available. However, even though there is a repeatedly shown positive correlation between the IOC and self-esteem and well-being, which made it rational to use them, it is still not fully examined. That is why three concepts were used to measure the IOC change, and not just one. This is also why not getting significant results should not immediately lead to dismissing the hypothesis set in this research. There is the possibility that these results were products of the measures chosen. It would be good to check the same hypothesis with the different measures of IOC.

This research is in line with some of the general conclusions from a number of previous IOC researches. First, levels of the self-esteem and well-being changed with the levels of the illusion of control. In study 1, the levels of well-being and self-esteem were

lower after introducing the IOC threat, compared to participant's initial levels. Also, difference on the affective well-being between the groups with different levels of the illusory control occurred in study 2. However, there were non-significant differences for self-esteem and cognitive well-being. Still, even though these insignificant results require more research to be explained, they do not diminish the positive correlation between higher levels of this illusion, self-esteem and well-being. These results are in accordance with many existing ones, which show that high levels of perceived personal control are correlated with higher levels of self-esteem and well-being, thus important for healthy functioning (Alloy & Clements, 1992; Bates & Stevens, 1989, Why & Huang, 2011). Additionally, this research shows that illusion of control levels can be changed even if the person is observing an event that is not directly related to her. This is in line with the already existing research (Matute et al, 2011). Results are also in accordance with the line of research that shows that the IOC levels can be affected by the situation (Alloy & Abramson, 1981). Previously, authors showed that IOC can be affected by increasing the mood (Alloy & Abramson, 1981), inducing guilt (Kouchaki et al., 2014) or even by surrendering control to another person (Wohl & Enzle, 2009). This research adds to this list by showing that it can also be increased by recalling positive personal events

Limitations and future research

There are a few limitations to this study. First one concerns the collection of the participants, as they were recruited online. This brings some limitations on itself, and one of the most important is that there is the limited population that can be reached (Wright, 2005). There is also a certain lack of experimental control, as the researcher is not present and does not have an overview over participants completing the research.

One already mentioned limitation is that the illusion of control was not measured directly, but indirectly, through the concepts it is correlated with. As said before, there is no IOC questionnaire tested in many researches, so its reliability is proven. There was the IOC

questionnaire used in study 1, which has shown to be sensitive to the changes in the levels of illusion of control (Fast et al., 2009). However, most of the questions are asking about personal control. Since the memory recollection task in the first two groups also asks about the personal control, there were concerns that participants will become aware of the purpose of the study, and possibly modify their answers accordingly. Since self-esteem and well-being measures used in study 1 also showed sensitivity to the changes in the IOC levels, they were used instead. It seems like this precaution measures worked, since the debriefing revealed that none of the participants guessed the exact topic of the research. However, it would be useful to repeat this research using more direct measures of the illusion of control.

Furthermore, lowering of the IOC levels was done indirectly. As study 1 showed, the threat worked. However, since this is, to my best knowledge, the first study of this type, it is not known if the results would be different if the threat was more direct and personal, especially considering how personal recollection task was. It would be interesting to run a similar study with a more personal threat, and check whether the results would differ.

The AM recollection task was done by the participants typing in their memories. Many of them were not willing to type; some even wrote that instead of recalling the memory, making their answers invalid. Some were not even willing to read the instruction for the task, which they clearly wrote instead of the memory. If participants were able to report the memories orally, it is possible they would give more details. Also, if they were able to listen to the instructions, instead reading them, they might have recalled more as well. That was not possible in this study, but would be interesting to do in future studies.

Of course, further research is needed to check whether the difference in restoring the illusion of control levels when a person recalls a control related event, opposed to when she recalls a positive event, unrelated to control, really does not exist.

Implications

This is the first study, to my knowledge, that primarily tests the relationship between illusion of control and autobiographical memory. Thus, it adds a new insight to the existing base of knowledge of these two concepts. Also, it is one of the rare studies that test the role of the AM as buffer against a threat. It would be very useful to continue with this and test the role of the AM as a buffer against different threats. Besides this, this study adds to the knowledge about the relationship between illusion of control and self-esteem and well-being.

Results of this study indicate the fast and almost effortless way in which the levels of the IOC can be increased. If a person is ever in the situation where she feels like she is losing control, she can recall appropriate past memory, and almost immediately feel better. This can be a very useful technique, which can easily be used in many everyday situations in which a person feels threatened.

Conclusion

This research was conducted to see if AM can serve as buffer against the threat to IOC. It was predicted that control-related memories will help increase the IOC. Results showed that this was not the case. Control component of the AM was not relevant. What was relevant was its valence - positive memories helped in increasing IOC levels. One explanation for this is that with positive memories people only focused on the positive, where with the control-related memories they also focused on the other, often negative aspects of the event.

Despite three measures being used, only one (PANAS-X) registered this increase in the IOC levels. It is not quite clear why this is the case, but possible explanation is because measures are indirect. Also, two other measures (RSES and SWLS scale), might have been too general to be able to catch differences produced by the threat used in research. However, as with the possible explanation for the valence effect, this explanation also goes beyond the scope of this research, and needs more research to be answered.

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Appendix A

Illusion of control threat

Serbian text (original)

Relativno skoro se pojavila nova bolest, Lindonsej sindrom, od koje je oboleo veliki broj ljudi. S obzirom na to da je u pitanju nova bolest, malo toga se zna o njoj. To takođe znači da ne postoji lek za koji je dokazano da leči ovu bolest. Međutim, postoje neke indikacije da dva leka, lek A i lek B mogu pomoći pri lečenju ove bolesti.

Kako bi testirali da li jedan od ova dva leka zapravo može da izleči ovu bolest, jedna bolnica je odlučila da sprovede eksperimentalno testiranje ova dva leka. Sproveli su test na 40 ljudi obolelih od Lindon sindroma. Dvadeset ljudi je dobilo lek A (grupa A), a drugih 20 je dobilo lek B (grupa B). Posle nedelju dana od početka testiranja 20 osoba iz grupe A nije pokazalo simptome bolesti. Takođe, jedna osoba iz grupe B nije pokazala simptome.

Posle inicijalnog testiranja, druga bolnica sprovela je slučno testiranje. Oni su podelili 34 obolele osobe u dve grupe, 17 u svakoj. Oboleli iz prve grupe primili su lek A, a oboleli iz druge lek B. U grupi koja je koristila lek A 15 pacijenata nije pokazivalo simptome bolesti posle jedne nedelje. U grupi koja je koristila lek B, 2 pacijenta nisu pokazivala simptome bolesti posle nedelju dana.

Posle drugog testiranja, treća bolnica je takođe odlučila da sprovede sopstveno ispitivanje. Oni su ponovili istu proceduru sa 42 pacijenta, 21 u svakoj grupi. U prvoj grupi, u kojoj su pacijenti dobili lek A, 18 se osećalo bolje posle nedelju dana. U drugoj grupi, u kojoj su pacijenti uzeli lek B, samo 2 pacijenta su se osećala bolje posle nedelju dana.

Koji od dva leka, A ili B, je po vašem mišljenju efikasniji u lečenju ove bolesti?

1. Lek A

2. Lek B

3. Ne znam

Ohrabrena preliminarnim testovima, velika farmaceutska kompanija je odlučila da počne sa proizvodnjom leka A, s obzirom na to da se činilo da može da izleči Lindon sindrom. Međutim, kako bi bili sigurni, odlučili su da sprovedu sopstveno testiranje, pošto bi greška bila fatalna za kompaniju. Kako bi dobili reprezentativnije rezultate sproveli su testiranje na 1000 pacijenata. Od toga 500 je primilo lek A, a preostalih 500 lek B. Međutim, nisu dobili očekivane rezultate. Samo par ljudi iz obe grupe nije pokazalo simptome pošto su uzeli bilo koji od dva leka. Posle toga, istraživači su shvatili da rezultati dobijeni u toku tri inicijalna testiranja u bolnicama nisu bili ispravni, i da su dobijeni samo zbog malog uzorka. Ni jedan od dva leka nije u stvari lek za Lindon sindrom.

English translation

There is a new disease, called Lindonsyndrome, which affects many people. Since this is a new disease, there is not much known about it. This also means that there is not a medicine that is proven to cure it. However, there is some indication that 2 medicines, medicine A and medicine B can help with it.

In order to test if one of these two medicines can actually cure the disease, one hospital decided to run experimental trial on both of them. They conducted this trial on 40 people suffering from the Lindon syndrome. Twenty of those people were given the medicine A (group A), and other 20 were given medicine B (group B). After a week since the beginning of the trial, 20 participants from the group A showed no symptoms of the disease. Also, 1 participant from the group B showed no symptoms.

After the initial trial, another hospital ran similar trial. They split 34 patients in two groups, 17 in each. Participants in the 1st group received medicine A, and in the 2nd medicine B. In the group that used medicine A 15 patents didn't show symptoms of the disease after a week. In the group that used medicine B 2 patients didn't show symptoms of the disease after a week.

After the second trial, third hospital also decided to do they own research. They repeated the procedure with 42 patients, 21 in each group. In the first group, in which patients received medicine A, 18 of them were better after a week. In the second group, in which patients took medicine B, only 2 of them felt better after a week.

In your opinion, which of the two medicines, A or B, is more effective in curing the disease?

1. Medicine A

2. Medicine B

3. I don't know

Encouraged by preliminary drug trial results, big pharmaceutical company decided to start producing medicine A, since it seemed like it can cure the Lindsay disease. However, just to be sure, they decided to run their own drug trial, since making a mistake can be fatal for the company. In order to get more representative results, hey ran their experiment on 1000 patients. Five hundred received drug A, and the rest 500 drug B. However, they didn't get the expected results. Only few people in both groups showed no symptoms after taking these drugs. After this, researchers realized that results obtained during three initial trials in hospitals were not correct, and they occurred only because the low sample size. Neither medicine is actually the cure for the Lindsay disease.

Appendix B

Serbian language Rosenberg Self-Esteem Scale – original

Naznačite koliko se U OVOM TRENUTKU slažete sa svakom ovde navedenom tvrdnjom:

1 – Uopšte se ne slažem

2 – Uglavnom se ne slažem

3 – Uglavnom se slažem

4 – Potpuno se slažem

1. Ja osećam da sam osoba od vrednosti, ništa manje vredna od ostalih

2. Ja osećam da imam više dobrih osobina

3. *Sve u svemu sklon/a sam da osećam da sam gubitnik

4. Ja sam sposoban/ na da radim stvari kao i većina drugih ljudi

5. *Osećam da nemam puno toga na šta mogu biti ponosan/a

6. Imam pozitivan stav prema sebi

7. U celini, zadovoljan/na sam sobom

8. *Voleo/la bih da više poštujem sebe

9. *Ponekad se, svakako, osećam beskorisno

10. *Ponekad mislim da ne valjam uopšte

*Negatively worded items, re-coded in the analysis.

Appendix C

Serbian language Rosenberg Self-Esteem Scale – new version 1

Naznačite koliko se U OVOM TRENUTKU slažete sa svakom ovde navedenom tvrdnjom:

1 – Uopšte se ne slažem

2 – Uglavnom se ne slažem

3 – Uglavnom se slažem

4 – Potpuno se slažem

1. Ja osećam da sam osoba od vrednosti, ništa manje vredna od ostalih

2. *Ja osećam da nemam puno dobrih osobina

3. Sve u svemu nisam sklon/a sam da osećam da sam gubitnik

4. *Ja nisam sposoban/ na da radim stvari kao i većina drugih ljudi

5. Osećam da imam puno toga na šta mogu biti ponosan/a

6. Imam pozitivan stav prema sebi

7. *U celini, nisam zadovoljan/na sobom

8. *Voleo/la bih da više poštujem sebe

9. Gotovo nikada se ne osećam beskorisno

10. *Ponekad mislim da ne valjam uopšte

*Negatively worded items, re-coded in the analysis.

Appendix D

Serbian language Rosenberg Self-Esteem Scale – new version 2

Naznačite koliko se U OVOM TRENUTKU slažete sa svakom ovde navedenom tvrdnjom:

1 – Uopšte se ne slažem

2 – Uglavnom se ne slažem

3 – Uglavnom se slažem

4 – Potpuno se slažem

1. *Ponekad se, svakako, osećam beskorisno

2. U celini, zadovoljan/na sam sobom

3. *Sve u svemu sklon/a sam da osećam da sam gubitnik

4. *Ja osećam da nisam osoba od vrednosti, da sam manje vredna od ostalih

5. Mislim da dovoljno poštujem sebe

6. *Osećam da nemam puno toga na šta mogu biti ponosan/a

7. Nikad ne mislim da ne valjam uopšte

8. *Imam negativan stav prema sebi

9. Ja sam sposoban/ na da radim stvari kao i većina drugih ljudi

10. Ja osećam da imam više dobrih osobina

*Negatively worded items, re-coded in the analysis.

Appendix E

Serbian language Satisfaction With Life Scale – original

Naznačite u kojoj meri se slažete sa svakom od sledećih tvrdnji.

1 – uopšte se ne slažem

2 – ne slažem se

3 – pomalo se ne slažem

4 – niti se slažem, niti se ne slažem

5 – pomalo se slažem

6 – slažem se

7 – u potpunosti se slažem

1. Na više načina sam u svom životu došao-la blizu mog "idealnog života"

2. Uveti u kojima živim su odlični

3. Ja sam zadovoljan/na svojim životom

4. Do sada sam postigao/la najvažnije stvari koje želim u životu

5. Kada bih mogao/la živeti moj život ponovno, ništa ne bih menjao/la

Appendix F

Serbian language Satisfaction With Life Scale –new version 1

Naznačite u kojoj meri se slažete sa svakom od sledećih tvrdnji.

1 – uopšte se ne slažem

2 – ne slažem se

3 – pomalo se ne slažem

4 – niti se slažem, niti se ne slažem

5 – pomalo se slažem

6 – slažem se

7 – u potpunosti se slažem

1. Na više načina sam u svom životu došao-la blizu mog "idealnog života"

2. *Uveti u kojima živim nisu odlični

3. *Nisam zadovoljan/na svojim životom

4. Do sada sam postigao/la najvažnije stvari koje želim u životu

5. Kada bih mogao/la živeti moj život ponovno, ništa ne bih menjao/la

*Negatively worded items, re-coded in the analysis.

Appendix G

Serbian language Satisfaction With Life Scale –new version 2

Naznačite u kojoj meri se slažete sa svakom od sledećih tvrdnji.

1 – uopšte se ne slažem

2 – ne slažem se

3 – pomalo se ne slažem

4 – niti se slažem, niti se ne slažem

5 – pomalo se slažem

6 – slažem se

7 – u potpunosti se slažem

1. Uveti u kojima živim su odlični

2. *Do sada nisam ostvario/la najvažnije stvari koje želim u životu

3. *Kada bih mogao/la živeti moj život ponovno, puno toga bih promenio/la

4. *Moj život nije blizu onom kako zamišljam moj idealni život

5. Ja sam zadovoljan/na svojim životom

*Negatively worded items, re-coded in the analysis.

Appendix H

Serbian language illusion of control measure – original version

Molimo vas da oznacite koliko se slazete sa sledecim tvrdnjama u vezi sa količinom kontrole

koju imate nad određenim dešavanjima skali od 1 do 7

1 - Uopšte nemam kontrolu

2 - Imam veoma mali stepen kontrole

3 - Imam mali stepen kontrole

4 - Imam umeren stepen kontrole

5 - Imam visok stepen kontrole

6 - Imam veoma visok stepen kontrole

7 - Imam potpunu kontrolu

1. U kojoj meri ste u mogućnosti da imate neki stepen kontrole nad onim što se dešava u ekonomiji?

2. U kojoj meri će vaša zemlja u budućnosti izgledati drugačije zbog vas?

3. U kojoj meri možete uticati na političare?

4. Koliko imate kontrole nad onim što se dešava na vašem radnom mestu?

5. U kojoj meri imate neki stepen kontrole nad dešavanjima u svetu?

Appendix I

Serbian language illusion of control measure – new version 1

Molimo vas da oznacite koliko se slazete sa sledecim tvrdnjama u vezi sa količinom kontrole

koju imate nad određenim dešavanjima skali od 1 do 7

1 - Uopšte nemam kontrolu

2 - Imam veoma mali stepen kontrole

3 - Imam mali stepen kontrole

4 - Imam umeren stepen kontrole

5 - Imam visok stepen kontrole

6 - Imam veoma visok stepen kontrole

7 - Imam potpunu kontrolu

1. Nemam kontrolu nad ekonomijom

2. U kojoj meri će vaša zemlja u budućnosti izgledati drugačije zbog vas?

3. U kojoj meri imate kontrolu nad političarima?

4. Nemam kontrolu nad onim što se dešava na mom random mestu

5. U kojoj meri imate neki stepen kontrole nad dešavanjima u svetu?

Appendix J

Serbian language illusion of control measure – new version 2

Molimo vas da oznacite koliko se slazete sa sledecim tvrdnjama u vezi sa količinom kontrole koju imate nad određenim dešavanjima skali od 1 do 7

1 - Uopšte nemam kontrolu

2 - Imam veoma mali stepen kontrole

3 - Imam mali stepen kontrole

4 - Imam umeren stepen kontrole

5 - Imam visok stepen kontrole

6 - Imam veoma visok stepen kontrole

7 - Imam potpunu kontrolu

1. Nemam ni malo kontrole nad političarima.

2. Koliko imate kontrole nad onim što se dešava na vašem radnom mestu?

3. Nemam kontrolu nad tim kako će moja zemlja izgledati u budućnosti.

4. Nemam kontrolu nad dešavanjima u svetu.

5. U kojoj meri ste u mogućnosti da imate neki stepen kontrole nad onim što se dešava u ekonomiji?

Appendix K

Serbian language study introduction text – study 1

Poštovani učesnici,

Molimo vas da popunite ovaj upitnik koji je deo istraživanja studentkinje Nine Kasap za njen master rad, pod nadzorom prof. dr. Michaela Bendera na Tilburg univerzitetu.

Ovo istraživanje se sastoji od nekoliko upitnika, kratkog teksta i kratkog zadatka. Namenjeni su merenju različitih stvari – vašeg opažanja, stavova prema politici, vama i vašem životu. Za istraživanje vam je potrebno oko 10 minuta.

Svi vaši odgovori su potpuno anonimni i ni na koji način ne mogu biti povezani sa vama.

Za bilo kakva pitanja o ovom istraživanju možete se obratiti Nini Kasap ili Michaelu Benderu.

English translation study introduction text – study 1

Dear participant,

You are being asked to complete a survey for a study conducted by Nina Kasap as part of her master's thesis, under the supervision of dr. Michael Bender at Tilburg University.

The survey consists of few questionnaires, short text and a short task. These are designed to measure different things – your perception, attitudes towards politics, yourself and your life. It takes about 10 minutes to finish this survey.

All of your responses will be kept strictly anonymous and there will be no way to link your responses back to you.

If you have any questions about the study please contact Nina Kasap or Michael Bender.

Appendix L

Serbian language study debriefing text – study 1

Hvala vam na učesšću u istraživanju.

Ljudi uglavnom veruju da imaju nešto više kontrole nad događajima u svom životu nego što zapravo imaju. Ovo, uglavnom pozitivno uverenje, može biti umanjeno na različite načine, što može dovesti do negativnih posledica na blagostanje. Ovo istraživanje je prvi deo master rada koji istražuje načine na koji se ovo uverenje može povratiti nakon što je bilo sniženo. Cilj ovog dela istraživanja je da se utvrdi da li ovo uverenje može biti umanjeno nakon čitanja o manjku kontrole kod drugih ljudi.

Da ne bi umanjili naučnu validnost istraživanja molimo vas da ne raspravljate o ovom istraživanju sa potencijalnim učesnicima pre nego što oni završe istraživanje.

Za bilo kakva pitanja o ovom istraživanju možete se obratiti Nini Kasap ili Michaelu Benderu.

English translation study debriefing text – study 1

Thank you for participating in the research.

People usually believe they have more control over the events in their lives than they actually have. This, usually positive belief, can be lowered in different ways, which can lead to negative consequences for well-being. This survey is the first part of the master's thesis which explores the ways in which this research can be restored after it was lowered. The aim of this part of the research is to see whether this belief can be lowered after reading about other people experiences of not having control.

In order not to harm the scientific validity of our research, we would like to ask you

not to discuss the study with other potential participants before they have completed the study.

In case you have any questions or remarks, please contact Nina Kasap

or Michael Bender.

Appendix M

Serbian languageMemory Characteristics Questionnaire – short version

Imajući u vidu događaj koji ste upravo opisali, naznačite koliko se slažete sa sledećim

stavkama na skali od 1 do 7:

Memorija za ovaj događaj je	1 maglovita	2	3	4	5	6	7 oštra/jasna
Ukupna jasnoća je	1 nejasna	2	3	4	5	6	7 veoma jasan
Moja memorija za ovaj događaj je	1 nedovršena	2	3	4	5	6	7 veoma detaljna
Redosled događaja je	1 zbunjujući	2	3	4	5	6	7 razumljiv
Događaj se čini	1 kratak	2	3	4	5	6	7 dug
Generalni ton memorije je	1 negativan	2	3	4	5	6	7 pozitivan
Sećam se kako sam se osećao/la u vreme odigravanja ovog događaja	1 uopšte ne	2	3	4	5	6	7 definitivno
Moja osećanja su tada bila	1 negativna	2	3	4	5	6	7 pozitivna
Moja osećanja su tada bila	1 slabog intenziteta	2	3	4	5	6	7 veoma intenzivna

Sada, kada se prisećam ovog događaja, moja osećanja su	1 slabog intenziteta	2	3	4	5	6	7 veoma intenzivna
Generalno, ovog događaja se sećam	1 jedva	2	3	4	5	6	7 veoma dobro
Da li imate neke sumnje o tačnosti vaše memorije za ovaj događaj	1 imam puno sumnji	2	3	4	5	6	7 uopšte nemam sumnje

Otprilike kada se ovaj događaj odigrao? (obeležite jedno)

1. danas
2. juče
3. pre par dana
4. prošle nedelje
5. pre par nedelja
6. prošlog meseca
7. pre nekoliko meseci
8. prošle godine
9. ranije (ako se desio u detinjstvu, napišite koliko ste imali godina)

Appendix N

Serbian language Positive and Negative Affect Schedule-X

Ovaj upitnik se sastoji od reči i fraza koje opisuju različita osećanja kod ljudi. Pročitajte svaku

reč pažljivo i pored nje upišite broj kojim ćete označiti u kojoj meri se U OVOM

TRENUTKU osećate na opisani način. Brojevi imaju sledeća značenja:

1-veoma malo ili nimalo;

2 – malo;

 3 – umereno;

4 – prilično;

5 - izuzetno, jako

1. Oduševljeno

2. *Nesrećno

3. Zainteresovano

4. *Uznemireno

5. Jakim

6. *Krivim

7. *Uplašeno

8. *Neprijateljski raspoloženo

9. Pun entuzijazma

10. Ponosno

11. *Gnevno

12. Budno

13. *Postiđeno

14. Nadahnuto

15. *Nervozno

16. Odlučno

17. Usresrеđeno

18. *Napeto

19. Aktivno

20. *U strahu

*Negatively worded items, re-coded in the analysis.

Appendix O

Serbian language introduction text – study 2

Poštovani učesnici,

Molimo vas da popunite ovaj upitnik koji je deo istraživanja studentkinje Nine Kasap za njen master rad, pod nadzorom prof. dr. Michaela Bendera na Tilburg univerzitetu. Istraživanje se sastoji od kratkog teksta, kratkog zadatka za popunjavaje i par kratkih upitnika. Glavna svrha ovog istraživanja je da saznamo više o ličnoj memoriji – memoriji o sopstvenoj prošlosti. Potrebno je oko 15 do 20 minuta da se popuni ovaj upitnik.

Učestvovanje u ovom istraživanju je dobrovoljno, i niste u obavezi da učestvujute ili završite istraživanje. Ipak, ukoliko odlučite da učestvujete u ovom istraživanju, izuzetno bismo cenili ako biste ga popunili do kraja.

Molimo vas da istraživanje popunite bez prekidanja (npr. ne pravite pauze, ne započinjite da se bavite drugim aktivnostima dok popunjavate ovo istraživanje). Molimo vas da uradite celo istraživanje odjednom.

Svi vaši odgovori su potpuno anonimni i ni na koji način ne mogu biti povezani sa vama.

Za bilo kakva pitanja o ovom istraživanju možete se obratiti Nini Kasap

ili akademskom supervizoru Michaelu Benderu.

English translation introduction text – study 2

Dear participant,

You are being asked to complete a survey for a study conducted by Nina Kasap as part of her master's thesis, under the supervision of dr. Michael Bender at Tilburg University.

The survey consists of the short text, short task you need to fill in, and few short questionnaires. Main purpose of this study is to find out more about peoples personal memory – memory of one's own past. It takes about 15 to 20 minutes to finish this survey. Participating in this research is voluntary, and you are not obligated to participate or finish. However, we would very much appreciate if you respond to all questions when starting the survey.

When filling in the survey, please do it in uninterrupted manner (e.g., do not take breaks, or engage in other activities during the survey). Please fill the entire survey at once. All of your responses will be kept strictly anonymous and there will be no way to link your responses back to you.

If you have any questions about the study please contact Nina Kasap

or the University supervisor Michael Bender.

Appendix P

Serbian language debriefing text – study 2

Hvala vam na učešću u istraživanju.

Ljudi uglavnom veruju da imaju više kontrole nad svojim životima nego što zapravo imaju. Skloni smo da mislimo da naše akciju utiču na ishod događaja, čak i kada to nije slučaj. Ovo uverenje nije samo učestalo, ono takođe može biti i veoma korisno. Ljudi se osećaju motivisanima kada veruju da mogu da promene ishod događaja. Ako verujemo da imamo kontrolu, imaćemo dobar osećaj u vezi sa našim sposobnostima. Kada nam fali ovo uverenje, naše raspoloženje je smanjeno, nekada čak i do granice depresije.

Ovo uverenje je veoma važno, ali može biti lako oduzeto ili smanjeno u svakodnevnom životu. Zbog toga u ovom istraživanju pokušavamo da utvrdimo da li ovo uverenje može biti povećano ako se osoba priseti događanja iz lične prošlosti u kom je imala

kontrolu nad ishodom situacije. Drugim rečima, mi mislimo da prisećanje na događaj u kom smo stekli kontrolu pomaže da održimo uverenje da imamo kontrolu u sadašnjosti.

Kako bismo utvrdili da li je ovo zaista slučaj, ovo istraživanje poredi 3 grupe ispitanika. Prva grupa je imala instrukciju da se seti događaja iz lične prošlosti u kom su bili u mogućnosti da zadobiju kontrolu nad ishodom događaja. Druga grupa je dobila instrukciju da se priseti događaja u kom nisu bili u mogućnosti da zabodiju kontrolu. Treća grupa je bila kontrolna grupa, koja služi da se utvrdi da li je došlo do promene. Učesnici iz ove grupe su dobili instrukciju da se prisete pozitivnog događaja iz svog života. Svaki ispitanik je bio nasumično raspoređen u jednu od ove 3 grupe, uključujući i vas.

 Da ne bi umanjili naučnu validnost istraživanja molimo vas da ne raspravljate o ovom istraživanju sa potencijalnim učesnicima pre nego što oni završe istraživanje.

Za bilo kakva pitanja o ovom istraživanju možete se obratiti Nini Kasap ili akademskom supervizoru Michaelu Benderu.

English translation debriefing text – study 2

It is very common for people to believe that they have more control over their lives that they really do. We often believe that our actions affect the outcome of event, even when they don't. This belief is not just common, it can also be very useful. People feel motivated when they believe that they can change the outcome of events. If we believe we are in control, we have a good feeling about our abilities. When we lack these beliefs, our mood is impaired, sometimes up to the point of depression.

This belief is very important, but it can be easily taken away in everyday life. This is why this research tries to find out if this belief can be increased by remembering events in personal past when person had control over outcome. In other words, we think that recalling

an event in which we gained power helps us maintain that belief of having power in the present.

In order to find this out, this research compared 3 groups of participants. First group was asked to remember event from personal past when they were able to gain control over outcome of the event. Second group was asked to recall an event in which they were not able to gain control. Third group was control in order to test if the change happened. Participants from this group were asked to remember positive experience in their life. Every participant was randomly distributed in one of those 3 conditions, and so were you.

In order not to harm the scientific validity of our research, we would like to ask you not to discuss the study with other potential participants before they have completed the study.

In case you have any questions or remarks, please contact Nina Kasap or Michael Bender.

Appendix Q

Tables for coding memory recollections

Positive words

a	aktuelno	apsolutno (uz pozitivne re)	aktivno
	anđeo	atraktivno	
b	bitno	blago	borba (u pozitivnom kontekstu)
	bogato	bodriti	
c	celo (celovito)		
č	čarobno	čisto	čvrsto
	činjenično	čuven	
d	dobro	drago	dražesno
	društveno	divno (diviti se)	dostojno
	delotvorno (deluje)	dopadljivo	dar(darežljiv)
	dirljivo	doterano	duhovno
e	edukovano	euforija	energično
	etično		
f	fer	fino	fenomenalno
g	graciozno	genijalno	glavno

h	harizmatično	hrabro	harmonično
i	izražajno	izuzetno	iskreno
	istrajno (trajno)	izvesno	istina
	izvrsno	ispunjeno	iznenadjujuće
	izdašno	istaknuto	iscelujuće
	idealno	impresivan	impozantno
	ispravno	iznenađenje (prijatno)	
j	jasno	jedinstveno	
k	korisno	kompletno	kvalitetno
	kreativno	kvalifikovano	
l	lepo	lako	
lj	ljubazno	ljudski	ljupko
	ljubav		
m	milo (mio)	moralno	motivišuće
	magično	marljivo	mir
	maštovit		
n	nežno	nepokolebljivo	nesalomljivo
	neosporno	nesumnjivo	nepobitno
	nepogrešivo	nedvosmisleno	neverovatno
	nagrada	neustrašivo	naklonjeno (naklonost)
	napredno	nezavisno	negovati
	napredak	nezaboravno	neopisivo
o	osećajno	odgovarajuće	odgovorno
	odlučujuće	opravdano	objektivno
	odlučno	otvoreno	odlično
	omiljeno	(pre)okrenuti	olakšanje
	optimistično	obožavati	obilno
	odgovarajuće	odobriti	odvažno
	odabrano	odanost	očaravajuće
	oduševljeno	obrazovan	otvoreno
	obezbeđen	obnoviti	ozaren
	odgovornost	oženiti se	
p	pozitivno	povoljno	pošteno
	pouzdano	pobeda	posebno
	pokrenuti	potvrdno	podrška (podržavati)
	podrška (podržavati)	pravedno	plemenito
	prijatno	pijateljski,	privlačno
	prihvatanje	prvoklasno(prvak)	pogodno
	pribrano	podesno	pravilno
	priznato	primamljivo	popraviti
	poklon	premija	prisebno
	ponosno	pohvalno	pravda
	pristati(na nesto dobro)	pravi	pametno
	poljubac	prestiž	
r	red (u redu)	raj (rajski)	rasčistiti
	razgovetno	razumno	realno
	ravnopravno	rođenje (porođaj)	radosno

s	saglasno	simpatično	snažno
	srdačno	smerno	slatko
	samopouzdanje	sigurno	specijalno
	solidarno	savršeno	slaviti (proslaviti)
	samosvesno		sklopiti
	snalažljivo (snaći se)	spasiti	smireno
	sabrano	srećno	slobodno
	superiorno	složiti se (slagati se)	skladno
	sposobno	sjajno	spokojno
	smelo	staloženo	slavno
	stvaralački	suštinski	smeh
	složno	samostalno	smireno
	spremno	spretno	sunčan
	super	senzacionalno	strava (vidi 67ontext)
	slatko	slast	shvatiti
	svadba	spontano	
š	šarmantno	šampion	šala
t	tačno	talentovano	tešiti
u	ugodno	uživanje (užitak)	uspešno
	ubedljivo	uveren, uvereno	upotpuniti
	uzorno	ushićeno	uvaženo
	uzbudljivo	upečatljivo	umno
	umiljato	uglađeno	ugled
	uvežbano	ukusno	udobno
	uspeh	udati se	
v	valjano	važno	vedro
	vrlo (punovrlina)	vredno	voljno
	veličanstveno	veselo	verodostojno
	verno	verovati	vrlo
	velikodušno	vešto (izvežbano)	vično
	vitalno	venčanje	veriti se
z	zadovoljstvo, zadovoljavajuće	zdravo	zgodno
	zlatno	zahvat	zapanjujuće
	zračeći	zanosno	znamenito
	zabavno	zagrljaj	značajan
	zaslužno	zaštićen	zaigrano
	zadivljeno	zainteresovanost	
ž	živahno		

Negative words

a	aljkavno	antipatično	alarmantno
	apsolutno (uz negacije)	arogantno	agresivno
b	bolesno	bedno	besmisleno
	baksuz	besno	beznadežno
	bestidno	bol	bojazan
	borba (u negativnom kontekstu, kao mučenje)		

d	depresivno	deficitarno	dno
đ	đavolski		
f	fobija		
g	gnusno	grozno	grubo
	gore (od)	gadno (gađenje)	gnev
	gorčina	gušiti se, gubiti dah	
h	haotično		
i	inferiorno	izuzetno (uz negativne reči)	isključeno
	iznenađenje (neprijatno)		
j	jadno	jalovo	jeftino
	jeza (jezivo)		
k	kobno	krivo (krivica)	kivno
	kajanje	kazniti	
l	loše	lažno	
lj	ljut	ljigavo	ljubomorno
m	mizerno	malo	mlitavo
	mučno	maloumno	manjkavo
	maler	mrsko	mrgodno
	melankolija	mržnja	manija
n	nedostojno	neplodno	nikakvo
	nesreća	nemoćan	nisko
	neuljudno	neveselo	neprihvatljivo
	neravno	nezgodno	nemarno
	neoprezno	neobazrivo	neispravno
	nezadovoljavajuće	nikakvo	naopako
	netačno	neprilično	nedovoljno
	neutešno	nespojivo	naporno
	nepodnošljivo	neprijatelj	nasilje
	nervoza	napetost	neugodnosti
	nemir	neodgovorno	nepovoljno
	nepuno	neprijatno	ne postoji
	nije u redu	nerazumljivo	nerealno
	nesigurno	neugodno	neuspesno
	neprijatelj	nepravilno	
o	oskudno	osrednje	odvratno
	okrutno	opako	odurno
	odbojno	obeshrabreno	očaj
	odrično	ogorčenost	ozlojeđenost
	omalovažavanje		
p	pokvareno	pakosno	patnja
	plitko	podlo	preterano
	pogrešno	prljavo	prekinuto
	pesimistično	prezir	prokleto
	pakleno	prekršaj	pogrdno
	poraženo	plašljivo	prosto

	poročno	potištenost	panika
	preneraženost	potcenjivanje	pogodilo (me nešto)
	preminuo	pristati(na nesto loše)	pozitivno
	povreda	potreseno	posesivnost
	prevariti		
r	rđavo	rovito	razočaravaljuće
	razjareno	razdražljivost	rasprava
	rat		
s	slabo	siromašno	svirepo
	strah(strašno, strahovito)	skandal	strogo
	srdito(srdžba)	smeteno	strava (vidi 69ontext)
	sramotno	strepnja	stid
	sumnjivo	senke	svađa
	smrt	smetati	
š	štetno	šturo	škrto
	šok(antno)		
t	trulo	teško	tanko
	tiho	tužno	teskoba
u	utučeno	užas	uzburkano
	uvredljivo	uznemireno	uplašeno
	uobražen	usamljenost	uzrujanost
	ugasiti	umreti	uništiti
v	varljivo	ucena	
z	zlo (zloslutnost)	za žaljenje (žalosno)	zverski
	zamršeno	zapušteno	zaprepašćujuće
	zbunjeno	zbrkano	zabrinutost
	zabranjeno		
ž	žalost	žaljenje(samosažaljenje)	

Success-related words

a	angažovanje	ambicija	
b	benefit		
c	cilj(uz pozitivne reči, poput postići)		
d	dostignuće	delovati	dogovor (dogovoriti se)
	dobit	disciplina	doprineti
i	izvršiti	ishod (uz reči kao dobar, pozitivan…)	istrajnost
	izaći (na dobro)	ispasit (dobro)	ispravno
k	korist		
m	moćno (imati moć)		
n	napredak	nagrada	
o	ostvariti	olakšica	odmak
	osvojiti nešto	objasniti	ok (okej)
	odgovornost		
p	postići	podvig	pristanak
	preduhitriti	progres	profit

	pobeda	ponos	proći
	položiti	povišica	posledice (dobre)
	popraviti		
r	rast	rezultati (uz pozitivne prideve, kao npr dobri)	realizovati
	red (u redu)	regulisati	
s	saglasno	spasiti	steći
	strpljenje	saradnja	sprečiti (problem)
	snalažljivo (snaći se)	slava	srediti (nešto)
t	trijumf	trud	
u	uspeh	uspon	unos
	upornost	ubediti (nekoga, sebe)	
v	veština		
z	završiti (svršiti)	zarada	znanje

Failure-related words

b	bezuspesno		
c	cilj(uz negatvne reči)		
d	degradirano	dotaći dno	
g	gubiti	greška	
i	ishod (uz reči koje označavaju nešto loše)	izaći (na loše)	ispasit (loše)
	izneveriti (nekoga, nešto,sebe)	izbrbljati	izgubiti
k	kvar	krenuti nizbrdo	
n	neuspeh	nemoćno	nedostatak
	nazadak (unazaditi)	nasukati se	
o	omašiti	otkazati	omaći
	odustati		
p	propast	podbaciti	pretrpeti neuspeh
	pasti	prekinuti	ponoviti (neuspeh)
	pokvariti	pogoršati	poraz
	promašaj	potonuti	potonuti
	pogrešiti	posledice (loše)	pasivnost
r	rezultati (uz negativne prideve, kao npr loš)	razočarati	
s	sprečiti (ne uspeti u tome)	srušiti	
š	šteta (naštetiti)		
z	zatajiti	zabuna	zabrljati
	zapeti	zalutati	

Gaining control related words

a	autoritet		
b	boriti se		
d	disciplina	dominirati	dati (sve od sebe, ispit)
	dokazati nešto (sebi ili drugima)		

i	istrajati	inicijativa	izbeći loše
j	insitiranje	investirati u nešto	ispraviti
k	kontrola	koncentrisati	
m	moći		
n	nadmoć	nadzor	napraviti
	nastaviti		
o	ovladati	obuzdati	odrediti
	odmeriti	odluka (doneti); odlučiti	organizovati
	objasniti (i da drugi razumeju)		
p	pokupiti (sebe, nekoga, nešto)	pribrati se	podesiti
	proveriti	pokušati (i uspeti)	pridobiti (zadobiti)
	preokrenuti	pokrenuti	preuzeti odgovornost
	popraviti	pružiti pomoć	položiti ispit
	prevladati	predvidivo	
r	regulisati	red (srediti)	reagovati
s	smiriti (sebe, druge)	sprečiti	sila
	snaga	supervizija	sposobnost
	smoći (snagu)	sastaviti se	spasiti (sebe, nekoga)
	snaći se		
u	uspeh	učiniti nešto	uticati (na nešto,nekoga)
	upravljati	uzdržati se	uraditi (nešto)
	upasti (u nešto dobro)		
v	vođstvo	vlast	veština
z	zapovedati	zahvaljujući (sopstvenom naporu)	zarađivati
	zgrabiti		

Losing control related words

b	bespomoćno	borba (izgubiti)	
d	dići ruke (od nekoga, nečega)	dobiti zabranu	
h	haos		
k	kontrolu (izgubiti)		
n	nemoćno	nered	nesposobnost
	napustiti	ne reagovati	ne znati
	nepredvidivo	ne moći	
o	odreći	odbiti	odustati
	odluka (doneti); odlučiti - loša		
p	pobrkati	pokušati (i ne uspeti)	paralisan (biti)
	pasivan	pasti (ispit)	poražen
s	slabost		
u	učiniti nešto (nemoć)	uticati (nemoguće)	uspeti (ne)
	uraditi nešto (ne uspeti)		
z	zanemariti	zapostaviti	upasti (u nešto loše)