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Unpacking the determinants of life satisfaction in the Covid-19 era: a survey experiment

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Introduction

Over the past few decades, society has changed dramatically. Time ago, various aspects of life were simpler while today we have devised new techniques to achieve goals in an apparently less intrusive way, as happened in the case of marketing. Once a generic technique was used effective for all types of consumers while today consumers try to avoid advertising. Today, less obvious and more persuasive techniques are therefore used in this area too: unconventional marketing (cit. Responsible Citizens and Sustainable Consumer Behavior, Pietro Lanzini 2017). In this paper we analyse if and to what extent the methodology with which some messages are presented manages to convey and manipulate people's responses.

Making people think about a recent event can change people's assessments even in the present moment. Remembering a recent event can lead to a more optimistic and happy evaluation of life if the event was positive than if the event was unhappy or negative. This may be partly due to the fact that the memory is closer to us in time and can be considered representative of other events occurring in the present. (cf. Tversky & Kahneman, 1982).

Another factor that can push people to give more weight and importance to recent events is linked to the characteristics of human memory. Events that happened recently have a greater impact precisely because we are able to remember them more clearly, especially if they have had a strong emotional impact on us.

Thinking about a certain type of event can have an effect on the evaluations that are made later. (cf. Dermer, Cohen, Jacobsen, & Anderson, 1979). Therefore, remembering happy or unhappy events, especially if they happened recently and have an emotional impact, can have an effect not only in the assessments that are given regarding the present moment but also regarding future expectations. Subjects may evaluate themselves as more satisfied in the present and may think that in the future

they will be happier if they are thinking about past events judged as pleasant than when remembered events are judged as unpleasant.

For example, Schwarz and Clore (1983) reminded subjects of pleasant or unpleasant past events, but instructed them to pay particular attention to the feelings associated with the events and to "describe them as vividly and in detail as possible". Under these conditions, subjects who described negative past events were in a more unhappy mood and reported lower life satisfaction than subjects who described positive events. If, on the other hand, you lead people to reflect in particular on situations and emotions then this has a strong impact also in the present, so much so that it changes the mood.

In this paper, an investigation experiment is carried out that proposes to evaluate whether the memory of a happy, unhappy event or not having remembered any event has effects on the happiness perceived by the subject in the present moment and on the expectations that it has regarding his future happiness. Considering that Covid-19 has been the most discussed topic of the last two years, during the experiment proposed in this paper we ask the interviewees to briefly focus on this topic with the aim of increasing the level of emotionality of the subjects who are part of the sample.

The experiment also aims to evaluate the context effects in life satisfaction. We intend to evaluate whether focusing attention on the main domains of life produces a context effect on the interviewees. We evaluate whether the introduction of these domains causes an effect on life satisfaction. The domains of life chosen in this experiment are aimed to raising awareness of the main fundamental determinants of life satisfaction. There are six domains of life: income, family, work, friend relationships, romantic relationships and health.

With the introduction of the domains we create the context effect: we provide more details on the subject of an evaluation that will take place later, this procedure is called "unpacking effect" by psychologists (see Van Boven and Epley , 2003).

In our experiment we compare the evaluations obtained on life satisfaction between the questionnaires in which the domains of life were referred, to those in which the

domains of life were not mentioned, those in which we manipulated the frame (asking to remember happy or unhappy events) and those in which we have not manipulated the frame.

The presence of the domains can encourage the subjects in the sample to give less subjective evaluations by reducing the variance and increasing the reliability of life satisfaction and future expectations of this.

By paying more attention to the domains of life, the evaluation of life in general could better reflect a weighted aggregation of the domains of life.

In this way, we can see how the presence of the domains attenuates or emphasizes the effect of frame manipulation. So, with the same frames, we can compare the manipulations on satisfaction with life between the treatment in which the domains were expressed and the treatment in which the domains were not expressed.

The presence of such domains is likely to have an impact on life satisfaction ratings and expectations. We expect that the effect of the initial manipulation, having remembered a positive or negative event, can be emphasized precisely by the presence of the domains on life. We expect that the unpacking effect lead people to think more about the subject being evaluated. The theory relating to the unpacking effect suggests that the subjects, in this case, could report more extreme evaluations, especially taking into consideration our sample made up of middle-class, educated and healthy individuals.

Numerous contributions analyse how the structure of the questionnaire can lead to influence the assessments of the subjects. In this study, we not only try to measure the relevance of context effects (such as Angelini, Bertoni and Corazzini, 2016) but also how this effect attenuates or emphasizes the effect of manipulation on memories.

We get different effects based on the type of manipulative frame and the intensity of the manipulation given by the presence or absence of the domains of life.

We present different versions of the questionnaire in which we ask to remember happy or unhappy events or in which we do not ask any memories and versions in which we are asked to evaluate satisfaction for each domain of life or in which this request is not present.

We also expect that the unpacking effect is not homogeneous within the sample but that this effect is stronger for subjects who report being in conditions in which they are less satisfied.

The paper is divided into five sections. Following this first introductory part, in the second section, we present a review of the literature: we examine the psychological aspects and the economic literature that deals with the manipulation of questionnaires with particular regard to the context effect and unpacking manipulation.

In the third section, we show the experimental project and explain the results we expect to obtain, we elaborate verifiable predictions in order to formalize the results of the theories proposed by the economic and psychological literature.

In the fourth section we present the data obtained through the questionnaire, we prove the goodness of the data through balancing and we discuss the statistical approach chosen. The central part of section 4 shows the analysis of the results of satisfaction with life and its expectations for the six domains and the effect given by the presence of the memories, comparing them with those of all versions of the questionnaire. To conclude the section, we propose a content analysis that aims to show what kind of memories the respondents reported.

Finally, we reserve the fifth section for conclusions. We discuss the results obtained and the relevance of our study for life satisfaction research.

Chapter I Literature review

Bringing up memories, whether positive or negative, can affect people's level of happiness or unhappiness and their satisfaction with life. The fact that subjects' mood has an effect on their judgments of happiness has been found in several theories on the influence exerted on judgments.

The results of the literature also show that the level of satisfaction with life depends not only on whether memories are perceived as happy or unhappy, but also on when these events occur and how they are thought of (Schwarz, Strack and Gschneidinger, 1985).

Present events tend to represent the life situation of the individual at the present time, so thinking about them has a not significantly positive impact on the reported well-being of individuals. Thinking about the events that happen in the present moment does not have a significant impact because if I think about the present moment I do not experience different emotions that could manipulate the current ones. However, it is not possible to completely discard the possibility of an emotional influence.

A different discourse can be addressed for the influence of thought on the past. In this case the current state of the individual is influenced by thoughts about a past event that can become a standard with which to compare the individual's current situation if the event is perceived is neither positive nor negative but is perceived as a neutral memory. Remembering a neutral event could increase my level of satisfaction with life if I am having a better time now. If I am experiencing a worse time than neutral memory I will feel more miserable and my level of satisfaction with life will decrease (cf. Dermer, Cohen, Jacobsen, & Anderson, 1979).

In the event that thoughts about past events are perceived as positive or negative, the judgments on the level of satisfaction with life are influenced by the remembered event. This happens because imagining an event very vividly produces affective

reactions even in the present, which does not happen when remembering an event without real emotional involvement.

Thinking that the memory of a past event having aroused emotions provides information for subsequent judgments seems to be the common explanation of the current results of several studies. Both the emotionality and the quality of the memory generate information on the level of satisfaction with life. Therefore, the memory of an emotionally relevant event generates a priming effect as the memory that generates emotion influences the response to subsequent stimuli.

According to some researches (Schwarz & Clore, 1983; Schwarz & Strack, 1985) a person's mood can serve as information to influence the judgments made by subjects. In the literature, they found that emotional recollection did not influence judgments if the recollection was attributed to an external and provisional source (Schwarz & Clore, 1983).

It is possible that the emotionality that the past event aroused has made the aspects in agreement with the mood of the present life of the subjects more accessible with the manipulated mood than the aspects that are not. According to this theory, remembering an unhappy event makes the unhappy events of the present life more accessible for an individual (Clark and Isen, 1982). People who have remembered an event that had a positive effect are more likely to recover positive characteristics of their present life. The judgment on satisfaction with life in this case is based on a positively or negatively distorted sample of evidence because the subjects were led to think of a positive or negative memory.

Positive emotions and feelings such as happiness, joy, cheerfulness, and gratitude are a function of the emotional quality of the experiences people have on a daily basis. This seems an intuitive result but according to some studies, events that generate a strong emotion, may not bring as much perceived well-being in the life of the individual. The objective situation of individuals often only partially explains life satisfaction ratings in surveys (e.g., Campbell, Converse & Rodgers, 1976; Kamman, 1982).

Negative emotions and feelings like anger, fear or sadness don't work the same way. It has been shown that unhappy memories often decrease the life satisfaction of individuals (Zautra and Reich, 1983) but some results have shown that negative memories can increase perceived quality of life (Elder, 1974).

Studies by Brickman, Coates, and Janoff-Bulman (1978) found that subjects who won the $1 million lottery on average were no happier than subjects who did not win. Winners were less able to enjoy simpler everyday events that often generate moments of happiness such as eating or watching television.

It can be deduced that in order to understand the impact of events on life satisfaction, it is also necessary to consider some mechanisms that go beyond the quality of the events themselves. It is also possible to consider psychological aspects that contrast between the event that generates emotions and the actual satisfaction of individuals.

Many studies concerning cognitive functioning have shown that having recently used information increases the ease with which the information can be remembered and therefore increases the probability that it has an influence on the judgments and choices that occur subsequently (Anderson and Bower, 1973; Wyer and Carlston, 1979). For this reason, events that have recently occurred therefore have a greater impact on satisfaction with life, but events that have occurred less recently can have an influence if they are brought to attention or are reported before asking for an opinion.

The memory that has been thought of is considered as a representation of the events that occur in the present life (cf. Tversky and Kahneman, 1982), for this reason, the way in which the event is remembered is also important because it can make us perceive the event as positive or negative.

The influence of life events that is thought about may depend not only on their hedonistic relevance, but also on the way in which the events are thought of.

In one study, they were asked to recall happy or unhappy past events and describe them as vividly and in detail as possible thus paying close attention to the feelings that were associated with the events. Individuals who brought to mind more pleasant

events reported greater satisfaction with life and were less depressed than individuals who thought vividly of unpleasant memories.

Events with a strong emotional impact can positively or negatively influence the moods of the present moment depending on the positive or negative perception that the individual has of the event. In the event that the subjects were led to mistakenly attribute their depressed mood to the characteristics of the experiment, the effect of the unpleasant memory disappeared. It can be deduced that subjects use the state of mind as information at the time of evaluating life satisfaction and if they evaluate that information is incorrect they do not take it into consideration at the time of judgment.

From these considerations a general hypothesis. The quality and therefore the intensity of the emotion of life events that we happen to think of or that occur recently will have a directly proportionate influence on the judgments of general life satisfaction. Happy events remembered or experienced for a short time will increase the judgment on satisfaction with life and vice versa for negative events.

In the event that the process of remembering past events arouses emotions, the judgments are influenced by the emotion of the memory as a result of thinking about the events. Events can therefore influence judgments despite their temporal distance.

In the psychological and economic literature there are also important results regarding the context effect. The context effect is often more evident when the interviewee is asked to answer questions that require a very complicated process. In this paper, the context effect that we are going to analyse concerns the cognitive process carried out by the interviewees when they are asked how satisfied they are with their lives. This type of question requires you to understand the question asked, retrieve the information considered relevant, based on it give a grade, answer the question and sometimes adjust your judgment to the criteria of social desirability. It is an almost impossible task to perform in such a limited amount of time as that of a survey (Schwarz and Strack 1991, Diener et al., 2000). To answer such questions, individuals stop searching for information when they think they have enough to make a judgment. In this way, more weight is given to the information they have last

gathered or remembered because the mind is able to remember it first, more easily and more clearly. Even the elements within the same questionnaire can help to remember specific aspects of our life and to form an overall picture that can influence the answers that the individual gives at a later time, this generates the context effect.

The results obtained from previous studies have shown that some elements or questions within the questionnaire could influence the assessments on satisfaction with life even in a phase prior to the retrieval of information. The context effect can also influence how the interviewee understands the question. The context effect therefore modifies the meaning that the individual gives to the question on life satisfaction (Schwarz and Strack, 1999). This can happen when the interviewee is asked to focus on a specific area of life or if the interviewee gives a meaning to the question about satisfaction with life based on which aspects or time period the researcher is interested in.

According to the literature, individuals could interpret the same question in a very different way based on the different concept of well-being that the individual has. This makes the questions about satisfaction with life more subjective and therefore the answers given by the interviewees less comparable (Clark et al., 2005 and Angelini et al., 2014).

It is possible to find and reduce this type of error through the context effect. The context effect can increase the reliability of the judgment on the question of life satisfaction by providing a clear frame of reference (McClendon and O'Brien, 1988). We therefore expect the questions and information in the questionnaire to have an effect on perceived satisfaction with life. In line with the literature, asking people to rate satisfaction with life for each domain of life influences the judgment on overall life satisfaction as it creates a clear frame of reference that leads the interviewee to develop a more complete search for information.

The introduction of the domains of life, making the interviewees focus on the most relevant domains of life and their satisfaction with each of the domains, can generate unpacking effects making the judgment of individuals more extreme (Van Boven and Epley, 2003).

Unpacking and then dividing the object of the evaluation into several parts (process that occurs with the introduction of the domains of life) makes it easier to think about every single characteristic, generates in the interviewee a clearer and more detailed mental image and the individual remembers characteristics that otherwise he would not have taken into consideration. Therefore, the interviewees will advance more extreme assessments thanks to the greater safety and awareness on the topic under consideration.

In the literature, the theory of support for probability judgments (Tersky and Koehler, 1994) can be extended to evaluative judgments with an unpacking effect. According to the theory of support, in fact, dividing an event into different components increases the perception that the event can occur.

In the literature there are numerous experiments related to the context effect and the unpacking effect.

According to the paper by Angelini, Bertoni and Corazzini (2017), the first case of unpacking in a life satisfaction questionnaire, focusing attention and gaining awareness of six life domains has an impact on the judgment of life satisfaction. They carried out an experiment on three versions of a questionnaire that differ from each other in the intensity of the context effect presented to the interviewees. The presence of the domains made the subjects more satisfied with their lives, increases the significance of the results and the association between the judgments of the domains and the overall judgment on life satisfaction. They also showed that the observed effects are not homogeneous between the subgroups.

Conti and Pudney (2011) also found a lack of homogeneity of the context effect between the subgroups not through a questionnaire but through a face-to-face interview. The results showed that women on average have a greater correspondence between verbal and numerical communication than men have and declare themselves less satisfied with their own if the job is present at the time of the interview. They also found higher satisfaction ratings if children were also present at the interviews.

Mood has a greater impact on more general questions than those related to the domains of life. Schwarz and Clore (1983) in their study showed that life satisfaction decreases if asked on a rainy day. The results of Diner et al. (2000) obtaining that the level of optimism and positivity can have an overall weight of life satisfaction lead to less objective assessments.

It has been shown that individuals place greater emphasis on situations of which they have more details, such as the identifiable victim effect (Small and Loewenstein, 2003), (Small and Loewenstein, 2005), and (Kogut and Ritov, 2005). In the literature, they have found greater anger towards identifiable perpetrators than in cases in which it was not possible to identify one or more specific subjects. The results show that in the case of a charity, larger amounts are reached to help an individual who can be identified.

The phenomenon of the unpacking effect is also taken up in the bias in the contingent evaluation. According to this phenomenon, when asked to rate two components that are part of a bundle, people are willing to pay more than they are willing to pay for the solution in which both components are present in a single bundle. In this case, the sum of the value of each single component is greater than the value of the bundle itself. Bateman et al. (1997) demonstrated through an experimental analysis that the bias in contingent Evaluation also applies to fast food menus for which consumers attribute a lower value than the value of the sum of the hamburger and the drink that are part of the menu.

Some psychological biases can affect expectations of life. In Maurizio Bovi's paper (2009) he found that, there can be a gap between judgments, especially if they are too critical, and expectations that are often too optimistic. Just when individuals perceive that things are not going well, individuals tend to be bullish and make too optimistic forecasts about their life expectation. This behaviour expands the “forecast” error. Furthermore, future personal conditions tend to be perceived as better than past ones.

Chapter II The survey experiment

2.1 Experimental design

This research aims to evaluate whether increasing awareness of important life domains and the memory of past events that generate a strong emotion, influence the judgment on life satisfaction. Within the questionnaire, we asked respondents to recall moments related to the pandemic period of 2020 as Covid-19 generated strong emotions in most individuals.

We chose the form of the survey experiment: we trusted the questionnaire method in which we manipulated the nature of the moments to remember and the level of awareness on life satisfaction.

To see the effect of these manipulations, we administered six versions of a questionnaire.

The first is the baseline version, which does not include any reference to either the manipulation of memories or the domains of life (the version is referred to as T1). The second requires giving an explicit judgment on satisfaction for each domain (T2), in one version we ask to remember three happy memories (T3). In the fourth version, in addition to asking to bring back three happy memories, we ask for a judgment on satisfaction for each domain (T4). In the penultimate treatment, we ask to remember three unhappy memories (T5). In the final treatment, in addition to asking to bring back three unhappy memories, we ask for a satisfaction rating for each important domain of life (T6).

The life domains we refer to are those that literature has identified as the main determinants of life satisfaction and there are six in all: income, family, work, friends, romantic relationships and health (Frey and Stutzer, 2002a, b; Dolan et al., 2008). At the end of each release, we require individuals to report their level of satisfaction with life and to report expectations on life satisfaction they will have in 12 months. For the level of life satisfaction, we used the standard question of the European Social Survey "How satisfied are you with your life in general?" in order to be compatible with previous studies. Regarding the question about expectations on life satisfaction in 12 months we used the question “In 12 months, how satisfied will you be with your life in general?”. For both questions, the interviewees can express their opinion using a scale ranging from 1 (very dissatisfied) to 10 (very satisfied), compatibly with what they have done in studies prior to ours (Angelini, Bertoni and Corazzini, 2016).

In each treatment, before asking to bring back 3 memories (only in the versions in which this manipulation is present), before the questions regarding the six life domains (only in the versions in which this manipulation is present) and before the question about satisfaction with the life, an informative sentence has been inserted. This explains that Covid-19 has impacted our lives. A further clarification has been inserted before the questions on the six domains, in the versions in which they are present. This explains that domains represent important determinants of life satisfaction. Thanks to these brief informative introductions, subjects are free to interpret the sentence proposed to them. You can find the detailed formulation of the manipulations of the questionnaire in the appendix while the structure of all six versions of the questionnaire is graphically represented in Figure 1.

Treatment 1	*Treatment 2*
• Covid-19 information sentence • Question about satisfaction with life in general • Question about life satisfaction expectations in 12 months	• Covid-19 information sentence • Information sentence on the six domains of life • We ask for the **6 domains of life** looking back over the last 12 months
	• Covid-19 information sentence • Question about satisfaction with life in general • Question about life satisfaction expectations in 12 months
Socio-demographic information + information on the Covid-19 experience	Socio-demographic information + information on the Covid-19 experience
Treatment 3	*Treatment 4*
• Covid-19 information sentence • We ask the interviewee **to report 3 happy memories**	• Covid-19 information sentence • We ask the interviewee **to report 3 happy memories**
• Covid-19 information sentence • Question about satisfaction with life in general • Question about life satisfaction expectations in 12 months	• Covid-19 information sentence • Information sentence on the six domains of life • We ask for the **6 domains of life** looking back over the last 12 months
	•Covid-19 information sentence • Question about satisfaction with life in general • Question about life satisfaction expectations in 12 months
Socio-demographic information + information on the Covid-19 experience	Socio-demographic information + information on the Covid-19 experience
Treatment 5	*Treatment 6*
• Covid-19 information sentence • We ask the interviewee **to report 3 unhappy memories**	• Covid-19 information sentence • We ask the interviewee **to report 3 unhappy memories**
• Covid-19 information sentence • Question about satisfaction with life in general • Question about life satisfaction expectations in 12 months	• Covid-19 information sentence • Information sentence on the six domains of life • We ask for the **6 domains of life** looking back over the last 12 months
	•Covid-19 information sentence • Question about satisfaction with life in general • Question about life satisfaction expectations in 12 months
Socio-demographic information + information on the Covid-19 experience	Socio-demographic information + information on the Covid-19 experience

Figure 1. Experimental design

Treatment subjects take part in a four-step experiment. In the first block we perform a manipulation on memories. In the second, we ask for the level of satisfaction for each of the six domains of life. In the third block, we ask to report the level of satisfaction with life and the expectations of satisfaction with life in 12 months. In the last block, socio-demographic questions and a series of questions on the salience of Covid-19 are presented. You can find the wording of the four blocks graphically represented in Figure 2.

Block 1	Block 2	Block 3	Block 4
Manipulation of memories	Subjective satisfaction with the domains of life	• Satisfaction with life in general • Expectations on the level of subjective well-being in 12 months	Socio-demographic information + information on the Covid-19 experience

Figure 2: Main structure of the questionnaire

In the first block, we perform the manipulation of memories. We expose the subjects to the treatments that we describe below. For the versions of the questionnaire T1 and T2 we do not carry out any manipulation. After an introductory sentence explaining that Covid-19 has affected our lives, we expose the subjects one of the last two treatments of this block based on the version of the questionnaire. For versions T3 and T4 we ask the interviewee to report the first 3 happy events that occurred during the first lockdown that come to mind. In the case of the T5 and T6 versions we ask the interviewee to report the first 3 unhappy events that occurred during the first lockdown that come to mind.

In block 2, we ask for subjective satisfaction with life domains. For the T1, T3 and T5 versions, we do not carry out any manipulation. The respondents of the T2, T4 and T6 treatments are aware that, according to the literature, the six life domains are important determinants of life satisfaction and we ask to evaluate how much the respondents agree on satisfaction for each of the six domains of life on a 10-point scale (from 1 indicating "Strongly disagree" to 10 indicating "Strongly agree").

After completing the previous blocks, in block 3 we require subjects to report their overall life satisfaction and how much they expect they will be satisfied with their life in 12 months.

The limitation of this study is that we cannot validate the expectations questions because we would have to wait for the 12-month period that we are imposing in expectations. This further step would allow us to propose to the interviewees a further question on life satisfaction and to ascertain whether the expectations have actually been fulfilled or not.

We make the questions of block 3 a little different from those of block 2. In the second block we ask how much the interviewees agree with each of the statements while in block 3 we ask how satisfied they are with their lives. This difference in the way of asking the question is made to avoid the anchoring effect. We use question type differentiation to avoid anchoring between questions and answers.

The last of the four blocks contains questions on socio-demographic conditions and a series of questions on the salience of the respondent's Covid-19. These questions are aimed at obtaining more precise information about how salient the advent of the virus was for the subject.

2.2 Predictions

In this questionnaire, we ask ourselves two research questions:

We intend to evaluate the effect of memories related to Covid-19 (both positive and negative) on the subjective level of well-being in specific domains of life as well as on expectations of future happiness.

The study also aims to understand how the overall evaluation of satisfaction with life depends on the order and way in which the questions are asked (context effect). We intend to evaluate how the overall judgment on life satisfaction changes based on the presence of specific life domains: financial resources, family, work / study, friendship relationships, romantic relationships and health.

Regarding the first of the two research questions, we expect that in the surveys in which they were asked to remember the pandemic period with particular emphasis on negative or positive aspects, the interviewees experience stronger emotions and therefore give more extreme judgments than the subjects not manipulated. Despite the temporal distance between the moment in which the recalled event took place and the moment in which the subjects carry out the questionnaire, the effect on the judgment on life satisfaction will be influenced in a way that is congruent with the opinions expressed.

In the versions of the questionnaire in which respondents were asked to remember three happy events (T3 and T4) we expect that the subjects give more positive judgments in the evaluation of life satisfaction. In fact, we expect memories to generate a positive feeling in the individual who will be led to remember other positive memories more easily. This process will lead the subject to express a more favourable judgment in evaluating satisfaction with life. The effect should be intensified in the version of the T4 questionnaire in which there are specific questions on the domains of life.

We expect to have the same effect but the opposite for the T5 and T6 versions of the questionnaire in which we asked to remember three unhappy events. In these two treatments, we expect the subjects to express a more negative judgment in the evaluation of life satisfaction as they are manipulated by the memory of events that have generated negative emotions and feelings in them. The T6 treatment in particular should report more extreme evaluations therefore a lower judgment on satisfaction with life as an effect of the presence of the domains.

In the T1 and T2 versions of the questionnaire, however, this type of manipulation is not present, so in these cases we expect milder assessments, the absence of

manipulation should lead people to focus their judgments towards central values of the life satisfaction scale.

We are interested in understanding what the impact may be on life satisfaction and on its expectations depending on the manipulation of the treatment we are considering. We expect that if, in a version of the questionnaire we have remembered three negative events, the opinions on satisfaction with life that the interviewee expresses will be lower than those expressed by an interviewee who was reminded of three happy events. This would be an interesting result because it would mean that the initial manipulation of memories had an effect on the level of satisfaction with life. We also expect that the level of expectation of life satisfaction is on average higher than that of life satisfaction and that the level of life satisfaction in some cases may not be consistent with that of its expectations (see Maurizio Bovi, 2009).

We are interested in understanding what the impact on expectations may be depending on the manipulation of the treatment we are considering. If, in a version of the questionnaire, we recalled three negative events and the assessments on life satisfaction and expectations expressed by the interviewee are lower than those expressed by an interviewee who was reminded of three happy events, then this would be an interesting result. We expect this result and it would be interesting because it would mean that the initial manipulation of memories actually has an impact not only on our level of satisfaction with life but also on our expectations of satisfaction with life.

Regarding the second research question, we expect that the context effect is present and that the evaluations on life satisfaction are influenced by the presence or absence of the life domains. Our goal is to evaluate the context effect on reporting life satisfaction. To achieve this we raise the interviewee's awareness by introducing them to the fundamental domains of life before raising the question about overall life satisfaction. As we have shown in Section 2, there are survey studies in the literature that show the existence of the context effect. In the literature, there are the presuppositions for expecting that the presence of the domains produce an effect also in the mean of the distribution of evaluations. As the theory of support suggests (Van

Boven and Epley, 2003) highlighting important information regarding the objects of evaluation could favor a more extreme evaluation by the interviewees. People who have more information are less likely to make milder judgments. It should lead people to focus their judgments on external values on the rating scale. The interviewees subjected to the manipulation of the unpacking (those to whom the variants T2, T4 and T6 have been subjected) in case of positive judgments will give more positive judgments and in case of negative judgments these will be more marked. This happens because with the activation of the domains of life, individuals are more likely to build a more vivid and detailed image of their satisfaction with life (Schwarz and Strack, 1991, 1999; Schwarz, 1999). For this reason, we expect the subjects to express judgments that are more precise and that therefore the significance becomes more relevant as it is influenced by the presence in the questionnaire of the most important domains of life. Significantly increases the validity and reliability of self-reported life satisfaction by increasing the association between life satisfactions, life domain assessments and reducing the dispersion.

The overall assessment may better reflect a weighted aggregation of life domains when their relevance is increased and subjects are induced to think more deeply about all determinants of life satisfaction, thereby increasing the validity of this measure.

In this way, we can also show how the presence of the domains attenuates or emphasizes the effect of frame manipulation. So with the same frames, let us compare the manipulations on life satisfaction and life satisfaction expectations between the treatment in which the life domains were expressed and the treatment in which the life domains were not expressed. We expect respondents to make more extreme judgments in the case of the presence of domains. The presence of the domains of life pushes the interviewee to consider more objective references to make judgments. This pushes the interviewee to be more confident and aware of her answers and to make less mild judgments.

We expect the context effect to positively influence the evaluations on life satisfaction of our sample as it is mainly composed of middle-class, young, well-educated and healthy individuals. However, we also expect to detect heterogeneous

effects among the subgroups of our sample, such as in poor health or people with children, and we will be led to discuss the implications of these results.

2.3 Procedures

Our survey experiment was run using Qualtrics (http://www.qualtrics.com/) and took place in September 2021. The sample consisted mainly of business students from the University of Venice. We recruited the interviewees thanks to valuable external contacts of the kind professor Corazzini and using the main social networks: Facebook and Instagram. We have published a message to various contacts and in many groups on social networks in which we have invited subjects to fill out the questionnaire and to feel free to share it with friends, relatives and whomever they wish. We also referred to the short-lived questionnaire, so that they were more encouraged to fill it out as it takes just five minutes to fill out the more complex versions of the questionnaire. We used the randomizer so we divided the population randomly across the six different versions of the questionnaire. This allowed us to compare the results between the different versions of the questionnaire.

To be compatible with previous studies, we divide the questions into different pages. In Figure 1, you can see one or more then one black horizontal lines within each treatment, these depict the precise point where a break page is present in the real questionnaire. To construct the questionnaire, we decided to opt for methodological precision and we chose to change the page in a similar way to what was done in previous studies (such as Angelini, Bertoni and Corazzini, 2017). There is a page change at the end of the manipulation related to memories, after the presentation of the six domains of life and at the end of the questions about satisfaction with life and its expectations. We chose a scale of 1 to 10 to be consistent with the initial study. We chose to ask respondents to think of just three happy or unhappy memories to be

consistent with previous studies (Strack, F., Schwarz, N. and Gschneidinger, E., 1985).

The interviewee is obliged to answer all the questions on the page in order to access the next page of the questionnaire. The questionnaire does not allow you to go back and edit the questions on the previous pages. We have taken these precautions to avoid the anchoring effect, always for the same purpose we have chosen to formulate the questions regarding subjective satisfaction with life domains differently with those regarding satisfaction with life in general and expectations on the level of subjective well-being between 12 months. In the questions regarding satisfaction with life in general we ask how much the respondents agree with each of the statements while in the questions regarding satisfaction with life in general and expectations on the subjective level of well-being in 12 months we ask how satisfied they are. This difference in the way of asking the question is done to avoid the anchoring effect. We use question type differentiation to avoid anchoring between questions and answers.

The limitation of this study is that we cannot validate the questions about expectations because we would have to wait for that time frame that we are imposing in expectations.

We choose "How satisfied are you with your life in general?" as a question about satisfaction with life, as it is the standard question used by the European Social Survey.

We have chosen to give respondents the opportunity to choose whether to use a version of the questionnaire in English or in Italian in order to make the questionnaire accessible to a wider number of people. At the beginning of the questionnaire, the respondents were informed that the survey is anonymous and the data is analyzed in aggregate form with the aim of reassuring the respondents and making them respond as sincerely and accurately as possible.

An initial sentence was added to the questionnaire explaining that Covid-19 has affected our lives. Thanks to this brief information, the subjects are free to interpret

the sentence proposed to them. This explanation introduces different areas of the questionnaire only in the versions in which these areas are present: the area in which we ask for three memories, the area in which questions about subjective satisfaction with the domains of life are present and the area in which there are the questions regarding satisfaction with life in general.

We have chosen to insert a further clarification before the questions on the six domains, in the versions in which they are present. This explains that domains represent important determinants of life satisfaction. Thanks to these brief initial informative introductions, subjects are free to interpret the sentence proposed to them.

At the end of the questionnaire, we entered the questions on socio-demographic conditions and a series of questions on the salience of Covid-19. We have also decided to include some questions regarding the pandemic in order to obtain more precise information about how salient the advent of the virus was for the subject.

Chapter III Empirical and statistical analysis

In the next phase of our analysis, we introduce several empirical models used to test whether there are actually statistically significant differences between the results obtained from the different treatments.

3.1 Empirical analysis

We start by exploring the goodness of the distribution of the population between treatments. We show that the subjects who are assigned to each of these 6 treatments are comparable to that of the other treatments.

First, we calculated the mean, the Standard deviation and the number of observations for each treatment.

Treatment	*Mean*	*Standard deviation*	*Observations*	*Percentage observations*
1	5.473684	2.022874	152	20.86%
2	6.007092	1.675438	141	19.34%
3	5.934426	1.844078	118	16.19%
4	6.150442	1.838192	103	14.13%
5	5.71028	1.990588	107	14.68%
6	6.181818	1.660009	108	14.81%

Table 1. Definition of life satisfaction level for the 6 treatments.

Table 1 shows mean, standard deviation, number of observations and the percentage of the number of observations in our sample made up of a total of 729 user responses.

The total responses to the questionnaire are 745. From these responses we decide to select the observations and to use for this study only the answers in which the respondents gave at least 2 memories out of 3. There was an obligation to answer in the questionnaire for the respondents. We have considered invalid the answers in which in more than one memory inserted there are no words that can actually remember a thought or a memory. We have chosen to adopt this technique because we have noticed that in this way the significance of the results obtained increases.

In table 1 we can observe that for the versions of the questionnaire in which we asked to report three memories the percentage of observations obtained drops slightly while treatment 1 and 2 have a higher number of observations. We expected a slight decrease in the number of observations for the four treatments in which we asked for the memories then the treatments 3, 4, 5 and 6. The percentage is a little higher among the treatments without memories but in any case, we have a homogeneous result. This allows us to analyse and compare the responses between the different 6 treatments.

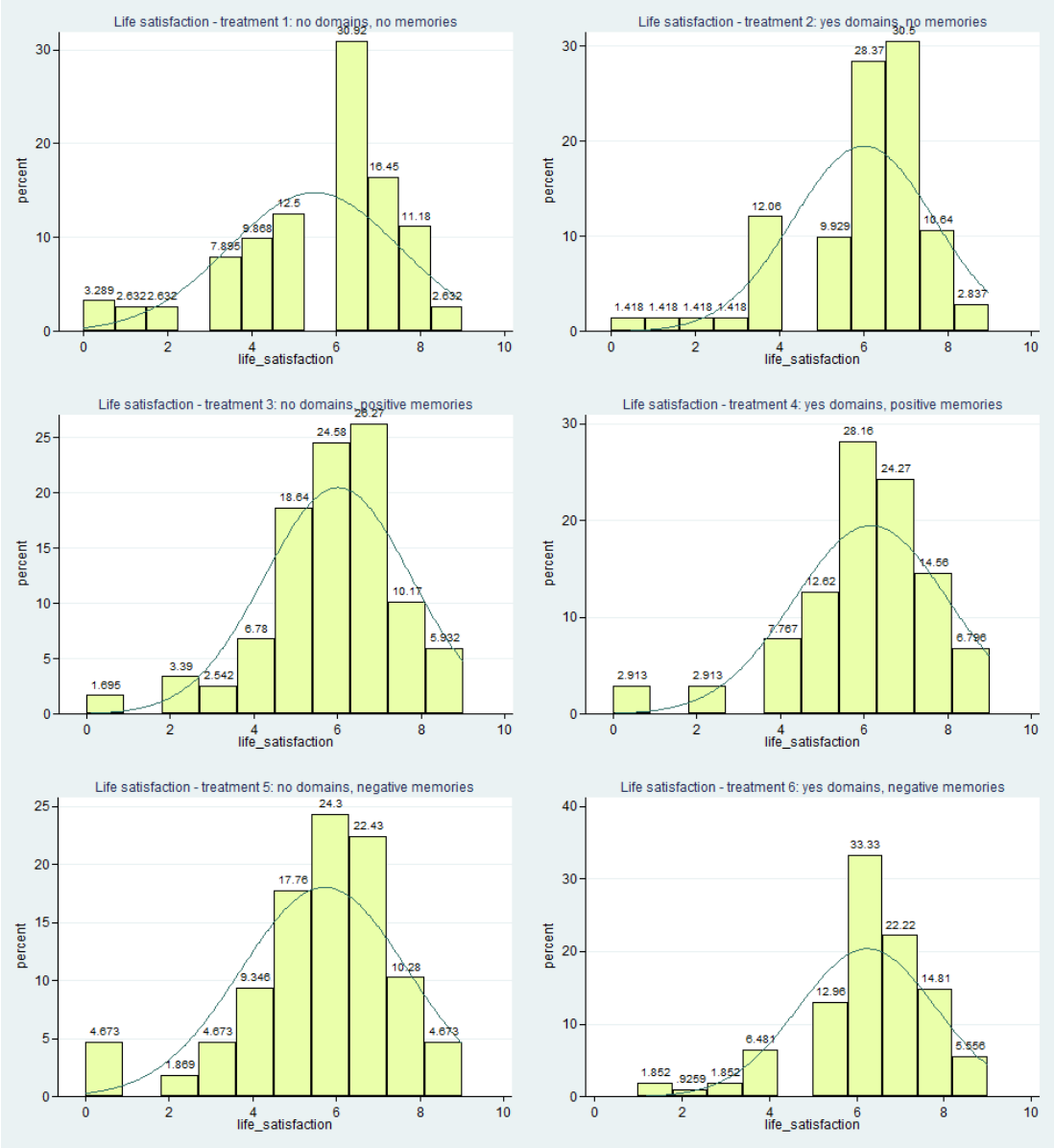


Figure 3. Histogram of the level of life satisfaction for each of the 6 treatments.

In figure 3 we used a graphical representation to be able to visually note the differences in life satisfaction for each of the six treatments.

Table 1 and Figure 3 show an interesting result for the treatments in which we asked to report satisfaction for each single domain of life. In treatment 6, with unhappy memories and the presence of domains, subjects have higher levels of life satisfaction than in treatment 4 in which we recalled happy memories and the fundamental domains of life were present. This result is interesting precisely because we expected the opposite effect.

In our forecasts, we expected to have higher levels of life satisfaction when we ask individuals to remember happy events. As the review literature illustrated in Chapter I shows: thinking about events that have had a positive emotional impact leads to happier responses later.

In our experiment, the histograms and the average life satisfaction value for each treatment show a different effect from the one we expected. In fact, we can observe in Table 1 that among the unpacked treatments (treatments 2, 4 and 6) the respondents to whom we made think of negative memories appear to have given a higher average value. If we put in order by value of life satisfaction, the least satisfied subjects among those to whom we have also asked the level of satisfaction for each fundamental domain of life, are those who have not remembered memories (treatment 2) with an average value of 6.01 . The subjects who recalled positive events (treatment 4) have an average life satisfaction value of 6.15 while, in the first place, the average life satisfaction value of those who recalled negative events is 6.18.

In the treatments in which we have not mentioned the domains with life (treatment 1, 3 and 5), on the other hand, we have different results. In this case, if we sort the treatments in ascending order based on the life satisfaction value, we can see that treatment 1, in which the subjects did not remember any memories, has the average value of 5.47, the lowest. Treatment 5 in which subjects had thought of a negative memory had an average life satisfaction value of 5.71 while subjects who remembered a happy moment (treatment 3) reported the higher average life satisfaction value between these three treatments: 5.93.

We can also note that in the treatments in which the unpacking took place and therefore the treatments in which we asked to report satisfaction for the six life domains all have a slightly higher average life satisfaction value than the treatments in which the domains with life were not mentioned.

This is also an interesting result that confirms our forecasts. The effect of the context effect given by the presence of domains with life was also found in previous studies (such as Angelini, Bertoni and Corazzini, 2016).

We have just determined the total number of observations needed to conduct our analysis. In the next step, we take care of the balancing. We want to know if the main control variables are balanced within the data collected. We want the mean of the chosen variable to be as equal as possible across the six treatments.

The main control variables we have chosen concern gender, age, perceived economic situation and the number of students.

If the results are balanced, the subjects who are assigned to each of our 6 treatments are comparable to that of the other treatments.

Treatment	*Mean*	*Standard deviation*	*Observations*
1	0.7236842	0.4486531	152
2	0.7163121	0.4523943	141
3	0.7033898	0.458711	118
4	0.7669903	0.4248156	103
5	0.6261682	0.4860966	107
6	0.5740741	0.4967879	108

Table 2. Definition of Female for the 6 treatments.

We show the descriptive statistics of the Female variable. My sample is mainly composed of women, in the first 4 treatments we are well above 70%, in the fifth we are around 62%. In the sixth treatment, the mean has a slightly lower percentage but is still biased towards women. We have many women in our sample. This percentage is actually much lower in the last treatment: treatment 6.

We want to verify that the subjects who are assigned to each of these 6 treatments are comparable to those of the other treatments. For this purpose we use a linear regression model in order to regress the particular Female characteristic on all treatment variables. After the regression, we carry out the binary treatment tests.

female	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
YesDomNoMem	-.0073722	.0527223	-0.14	0.889	-.1108792	.0961349
NoDomPosMem	-.0202944	.0557604	-0.36	0.716	-.1297661	.0891773
YesDomPosMem	.0433061	.0554616	0.78	0.435	-.0655789	.1521911
NoDomNegMem	-.097516	.0594333	-1.64	0.101	-.2141984	.0191664
YesDomNegMem	-.1496101	.0600773	-2.49	0.013	-.2675569	-.0316634
_cons	.7236842	.0364209	19.87	0.000	.6521809	.7951875

Figure 4. Balancing test: ordered probit regression with Female as dependent variable and considering NoDomNoMem as control treatment.

```
YesDomNoMem - YesDomNegMem = 0

F(  1,    723) =     5.42
      Prob > F =     0.0202
```

Figure 5. Paired comparison between treatment 2 and 6 with Female as the dependent variable

```
NoDomPosMem - YesDomNegMem = 0

F(  1,    723) =     4.11
      Prob > F =     0.0429
```

Figure 6. Paired comparison between treatment 3 and 6 with Female as the dependent variable

```
YesDomPosMem - NoDomNegMem = 0

F(  1,    723) =     5.01
      Prob > F =     0.0255

YesDomPosMem - YesDomNegMem = 0

F(  1,    723) =     9.23
      Prob > F =     0.0025
```

Figure 7. Pairwise comparison between treatment 3 and 5 with Female as dependent variable and pairwise comparison between treatment 3 and 6 with Female as dependent variable.

In the regression that we have shown (Figure 4) all the coefficients represent the deviation of the Female variable between the treatment to which the coefficient refers and that of baseline. Whenever one of these coefficients is significant, it means that the amount of women in the treatment to which that coefficient refers is different from the amount of women in the baseline treatment. In our case, compared to the baseline, the only treatment that has a lower number than the baseline, because the coefficient is negative, is YesDomNegMem where the percentage of women is

significantly lower than in other treatments. There is a bit of imbalance even in the binary tests (Figures 5, 6 and 7) but in most of the pairwise comparisons, the treatments are not significant. Out of 15 possible pairwise comparisons, we have 5 significant pairwise comparisons. Of these 5 significant treatments, 4 involved the YesDomNegMem treatment, the only treatment that resulted significant in the regression. On the genre, we have achieved a good balance between 5 treatments apart from 1 which is a little more unbalanced. Overall, we achieved a good balance in the pairwise comparisons except when we consider the sixth treatment where the percentage of women is significantly lower than for all the other treatments.

Treatment	*Mean*	*Standard deviation*	*Observations*
1	37.79605	14.56083	152
2	38.32624	14.31607	141
3	39.33051	15.55693	118
4	40.42718	15.28013	103
5	38.60748	15.04005	107
6	38.78704	14.74649	108

Table 3. Definition of Age for the 6 treatments.

Table 3 shows the descriptive statistics of the Age variable. My sample is made up on average of people who are 38 to 40 years old. In treatments 1, 2, 5 and 6 we have ages between 37.8 and 38.8, in the third we are around 39 years on average and in the fourth treatment, the mean is slightly higher, around 40 years old. In our sample, we have on average people slightly younger than 40 years. Age seems homogeneous in all six of our treatments.

We use a linear regression model and a series of binary tests in order to verify if the subjects who are assigned to each of these 6 treatments are comparable to those of the other treatments. Here we propose a regression for the Age characteristic on all treatment variables.

```
50 . regress age YesDomNoMem NoDomPosMem YesDomPosMem NoDomNegMem YesDomNegMem, robust

Linear regression                               Number of obs     =        729
                                                F(5, 723)         =       0.44
                                                Prob > F          =     0.8218
                                                R-squared         =     0.0031
                                                Root MSE          =      14.88

------------------------------------------------------------------------------
             |               Robust
         age |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  YesDomNoMem |   .5301885   1.688902     0.31   0.754    -2.785549    3.845926
  NoDomPosMem |   1.534456   1.856791     0.83   0.409    -2.110889    5.179801
 YesDomPosMem |   2.631132   1.913274     1.38   0.169    -1.125104    6.387368
  NoDomNegMem |    .811424   1.873191     0.43   0.665     -2.86612    4.488968
 YesDomNegMem |   .9909844   1.846238     0.54   0.592    -2.633644    4.615613
        _cons |   37.79605   1.182022    31.98   0.000     35.47545    40.11666
------------------------------------------------------------------------------
```

Figure 8. Balancing test: ordered probit regression with Age as dependent variable and considering NoDomNoMem as control treatment.

In the regression that we have shown (Figure 8) all the coefficients are the deviation of the variable Age between the treatment to which the coefficient refers and that of the baseline. In our case, compared to the baseline, all the coefficients are positive and none of them are significant. This shows us that the age that existed in each treatment is not significantly different from the age of the people of the baseline treatment. The binary tests confirm the absence of an imbalance as none of these was significant. In binary tests we have achieved a good balance for all treatments. We can say that for the Age variable the subjects who are assigned to each of these 6 treatments are comparable to those of the other treatments, the dataset worked well, we have a good balance in our treatment.

Treatment	*Mean*	*Standard deviation*	*Observations*
1	3.177632	0.6208515	152
2	3.141844	0.6162277	141
3	3.127119	0.5926416	118
4	3.15534	0.5900695	103
5	3.102804	0.6284839	107
6	3.25	0.6430796	108

Table 4. Definition of Family economic conditions for the 6 treatments.

We show the descriptive statistics of the Family economic conditions variable. Family economic conditions is a variable that can take a value from 1 to 5 in which 1 means that the subject perceives the economic conditions of his family far below the average and 5 far above the average.

In our sample, on average, in all treatments the subjects perceive the economic conditions of their family as average. In the first 5 treatments the average is around 3.1. In the sixth treatment the mean has a value only slightly higher than 3.25. The average value of treatment 6 is however very close to that of treatments 1 to 5.

We check if the subjects who are assigned to each of these 6 treatments are comparable to those of the other treatments. Below we use a linear regression model and a set of binary treatment tests.

```
70 . regress family_economic_conditions YesDomNoMem NoDomPosMem YesDomPosMem NoDomNegMem YesDomNeg

Linear regression                               Number of obs     =        729
                                                F(5, 723)         =       0.72
                                                Prob > F          =     0.6070
                                                R-squared         =     0.0053
                                                Root MSE          =     .61572

------------------------------------------------------------------------------
             |               Robust
family_eco~s |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  YesDomNoMem |  -.0357876   .0723628    -0.49   0.621    -.177854    .1062788
  NoDomPosMem |  -.0505129   .0742689    -0.68   0.497    -.1963213   .0952955
 YesDomPosMem |  -.0222918   .0769122    -0.29   0.772    -.1732897   .1287062
  NoDomNegMem |  -.0748278   .0789144    -0.95   0.343    -.2297566   .0801009
 YesDomNegMem |   .0723684    .079783     0.91   0.365    -.0842656   .2290025
        _cons |   3.177632   .0503996    63.05   0.000     3.078685   3.276579
------------------------------------------------------------------------------
```

Figure 9. Balancing test: ordered probit regression with Family economic conditions as dependent variable and considering NoDomNoMem as control treatment.

```
NoDomNegMem - YesDomNegMem = 0

F(  1,    723) =     2.88
     Prob > F =     0.0899
```

Figure 10. Paired comparison between treatment 5 and 6 with Family economic conditions as dependent variable.

Figure 9 shows a linear regression in which all coefficients are the variance of the Family economic conditions variable between the treatment to which the coefficient refers and NoDomNoMem, the baseline control treatment. Compared to the baseline, all coefficients are negative except YesDomNegMam and none of these is significant. The mean value of Family economic conditions present in each treatment is not significantly different from that of the baseline treatment. Only one of the

binary tests was marginally significant. Out of 15 possible pairwise comparisons, we have only 2 marginally significant results. This confirms the absence of an imbalance. We can infer that the Family economic conditions values do not have a significant difference between the 6 treatments. With respect to pairs, we have achieved a good balance for almost all treatments. We can say that for the Family economic conditions variable, the subjects assigned to each of these 6 treatments are comparable to that of the other treatments.

Treatment	*Mean*	*Standard deviation*	*Observations*
1	0.3026316	0. 4609158	152
2	0.248227	0.4335242	141
3	0. 2457627	0.4323745	118
4	0.2135922	0.4118463	103
5	0.2056075	0.4060467	107
6	0.2314815	0.4237457	108

Table 5. Definition of Student for the 6 treatments.

In Table 5 we show the descriptive statistics of the Student variable. My sample is partly composed of students, in the first treatment the average of students is above 30%, in the second and in the third we have about 24% of students. In treatment 4 and 5 we are around 20% and 21% of students while in the final treatment it is made up of about 23% of students. In the sixth treatment the mean has a slightly lower percentage than the other treatments and in particular compared to the treatment we used as a baseline in the linear regression that follows (Figure 11). We have a large number of students in our sample.

After showing the descriptive statistics of the Student variable, we propose a linear regression and binary treatment tests. We aim to verify that the subjects assigned to each of these 6 treatments are comparable to those of the other treatments.

Linear regression

Number of obs	= 729
F(5, 723)	= 0.82
Prob > F	= 0.5385
R-squared	= 0.0059
Root MSE	= .43092

student	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
YesDomNoMem	-.0544046	.0522919	-1.04	0.299	-.1570667	.0482575
NoDomPosMem	-.0568689	.054625	-1.04	0.298	-.1641115	.0503737
YesDomPosMem	-.0890393	.0551751	-1.61	0.107	-.197362	.0192833
NoDomNegMem	-.0970241	.0542137	-1.79	0.074	-.2034592	.009411
YesDomNegMem	-.0711501	.055325	-1.29	0.199	-.1797669	.0374667
_cons	.3026316	.0374163	8.09	0.000	.229174	.3760892

Figure 11. Balancing test: ordered probit regression with Student as dependent variable and considering NoDomNoMem as control treatment.

In the regression that we have shown (Figure 11), the coefficients represent the deviation of the Student variable between the treatment to which the coefficient refers and that of the baseline. In our case, compared to the baseline, all treatments have a negative coefficient in fact all treatments have an average value lower than treatment 1 (see table 5) but only treatment 5, NoDomNegMem, has a p-value below 10% and it is therefore marginally significant. This imbalance is due to the fact that the control treatment we have chosen has the highest average value, even 30%. This is also confirmed by the binary tests that do not show any imbalance. Out of 15 possible pairwise comparisons only one binary test is marginally significant. Also with regard to the students we have achieved a good balance apart from a treatment 1 which is a little more unbalanced.

These analyzes show that the results of the four main variables are balanced. We had a very good balance. To be more precise and to check for those few sources of imbalance I will report both pure treatment effects, without covariates, doing regressions with treatment dummies only, and then show that these results are robust when we include the control variables instead.

3.2 Regressions with treatment dummies

Among the empirical models we have chosen, we present parametric tests and specifically we use an ordered probit regression to analyse the responses obtained from our survey experiment. We have chosen this type of regression because it corrects the standard errors of the regression to take into account the fact that our dependent variable is not continuous but has discontinuity points because our life satisfaction values give us discrete data. The values that the life satisfaction variable can assume are 10: 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.

We present two regressions: the first (Figure 6) has among the regressors only the treatment dummies and another regression (Figure 8) which in addition to the treatment dummies also has the control variables. We add the control variables to clean up the variance, which allows us to estimate the treatment dummies. We present both regressions to see if, in the regression in which the control variables are present, the level of significance of the analysis on the treatment dummies increases.

```
Iteration 0:   log pseudolikelihood = -1394.7325
Iteration 1:   log pseudolikelihood = -1387.2797
Iteration 2:   log pseudolikelihood = -1387.2796

Ordered probit regression                       Number of obs     =        729
                                                Wald chi2(5)      =      14.47
                                                Prob > chi2       =     0.0129
Log pseudolikelihood = -1387.2796               Pseudo R2         =     0.0053
```

life_satisfaction	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
YesDomNoMem	.271884	.1175596	2.31	0.021	.0414714	.5022965
NoDomPosMem	.2798166	.1274853	2.19	0.028	.02995	.5296833
YesDomPosMem	.3917936	.136163	2.88	0.004	.1249191	.6586681
NoDomNegMem	.1263385	.135499	0.93	0.351	-.1392347	.3919116
YesDomNegMem	.403837	.1260124	3.20	0.001	.1568573	.6508168
/cut1	-1.784512	.120974			-2.021616	-1.547407
/cut2	-1.613784	.1139772			-1.837175	-1.390392
/cut3	-1.377213	.1034716			-1.580013	-1.174412
/cut4	-1.131913	.1005789			-1.329044	-.9347816
/cut5	-.6992059	.0940625			-.8835649	-.5148469
/cut6	-.2480062	.0905406			-.4254625	-.07055
/cut7	.491441	.0910061			.3130723	.6698096
/cut8	1.222617	.0987173			1.029134	1.416099
/cut9	1.938795	.1131727			1.71698	2.160609

Figure 12. Ordered probit regression considering NoDomNoMem as the control treatment (treatment 1).

To do the regression we generated 6 dummies: one for each treatment. Each of the 6 dummies takes a value of 1 for the observations in which the treatment associated with it has been compiled, otherwise it will have a value of 0.

The NoDomNoMem dummy assumes a value of 1 for observations to which version 1 of the questionnaire has been administered, version 2 corresponds to the YesDomNoMem dummy, version 3 corresponds to NoDomPosMem, 4 for YesDomPosMem, 5 for NoDomNegMem and YesDomNegMem has a value of 1 if 6 is the treatment that has been completed.

In figure 12, we can see that in the results table there are all the dummies we created except NoDomNoMem. NoDomNoMem is the control treatment which in this case is treatment 1, the baseline.

Figure 12 shows that Prob > chi2 = 0.0129. Prob> chi2 is the joint significance of the regression which is far below 0.1. It is significant at 5% because we have just exceeded 1% but it is still highly significant.

We are interested in pointing out two things: the sign of the coefficient, which in this case is always positive, and the p-value. We are comparing the treatment to which the coefficients refer. For example, YesDomNoMem shows us how the treatment with domains but without memory relates to treatment without domains and without memory, that is the baseline: the control treatment. The sign of the positive coefficient shows us that the value of the coefficient is greater than that of the baseline, in fact it corresponds to the shift from the baseline. The p-value shows whether the deviation from the mean is significant and we can see that it is significant with respect to the baseline for a significance level of 5%. Compared to the baseline, all treatments except to NoDomNegMem are significant with a significance level of 5%. Compared to the baseline, both thinking about memories and presenting domains except to NoDomNegMem seem to have stimulated life satisfaction. Particularly when there are domains because the level of the p-value decreases considerably. When there are no domains but the memory is negative they even tend to increase life satisfaction because the sign of the coefficient is positive but not significant. When we unpack the domains, having thought of a negative memory even becomes highly significant.

Now we make the internal comparison between these 5 treatments. For this reason we do a series of binary tests. So we do some contrasts in pairs between the different treatments.

```
[life_satisfaction]NoDomNegMem - [life_satisfaction]YesDomNegMem = 0

    chi2(  1) =    3.97
  Prob > chi2 =    0.0464
```

Figure 13. Binary test between treatment 5 and 6.

The binary tests carried out show that there are two positive results. The YesDomPosMem = NoDomNegMem test is marginally positive but it is crossed and therefore we do not consider it. The test between treatment 6 and 7 shown in Figure 13 is significant because Prob > chi2 is below the 5% threshold. In this case, we can say that when the memories are negative, people give a higher life satisfaction when we give the domains than when we don't mention them, with the same number of memories.

At this time, we have done a regression without checking other parameters. Now we use the same ordered probit regression to add some checks. The control variables we have added are sex, age, work done, educational qualification, perceived economic conditions, time spent on social media by the subject, positivity to the Covid-19 virus, if the subject is vaccinated for Covid-19, if the subject has known people who have had marked effects due to the Covid-19 virus and the number of people he knows who have had the aforementioned virus.

To these control variables, we add the treatment dummys with the variables of geographical origin, which in total are 5: dummy_north, dummy_center, dummy_south, dummy_islands and abroad. Dummy_north, dummy_center, dummy_south and dummy_islands represent different areas of the Italian territory as our sample is mainly made up of people of Italian nationality. This type of variables have exclusive dimensions because an individual cannot choose two of them: a respondent cannot be both from the north Italy and from abroad. For this reason, we make sure that one of variables of geographical origin is missing from the regressors. We insert all the variables of geographical origin except one, which is the

dummy_north to prevent collinearity from occurring. We insert the variable of control in order to have a history of why being in the north, in the center, in the south or abroad should matter.

We want the balance to be good enough for all dimensions. We therefore wish that the inclusion or not of the additional controls does not affect the significance, the sign and therefore the magnitude of the main regressors which are the treatment dummies in the regression that we saw previously in figure 12.

```
Iteration 0:   log pseudolikelihood = -1390.3634
Iteration 1:   log pseudolikelihood = -1335.2944
Iteration 2:   log pseudolikelihood = -1335.0339
Iteration 3:   log pseudolikelihood =  -1335.009
Iteration 4:   log pseudolikelihood =  -1335.007
Iteration 5:   log pseudolikelihood = -1335.0066
Iteration 6:   log pseudolikelihood = -1335.0066
Iteration 7:   log pseudolikelihood = -1335.0066

Ordered probit regression                       Number of obs     =        727
                                                Wald chi2(32)     =     866.15
                                                Prob > chi2       =     0.0000
Log pseudolikelihood = -1335.0066               Pseudo R2         =     0.0398
```

life_satisfaction	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
YesDomNoMem	.2870084	.119974	2.39	0.017	.0518636	.5221532
NoDomPosMem	.3042832	.1294178	2.35	0.019	.050629	.5579374
YesDomPosMem	.4095195	.1356366	3.02	0.003	.1436766	.6753624
NoDomNegMem	.1814321	.1372969	1.32	0.186	-.0876649	.4505292
YesDomNegMem	.4021644	.1284365	3.13	0.002	.1504336	.6538953
female	.0754859	.0875405	0.86	0.389	-.0960903	.2470622
age	-.0015804	.003992	-0.40	0.692	-.0094045	.0062437
work						
165	.1375383	.3573947	0.38	0.700	-.5629426	.8380191
166	.1488169	.1386463	1.07	0.283	-.1229248	.4205587
167	.3071476	.1422463	2.16	0.031	.02835	.5859452
168	.4828751	.1857436	2.60	0.009	.1188243	.8469258
169	.7685133	.3451524	2.23	0.026	.092027	1.445
170	.5634976	.3044626	1.85	0.064	-.0332381	1.160233
171	-.2948161	.2082958	-1.42	0.157	-.7030683	.1134361
172	-.6549931	.359783	-1.82	0.069	-1.360155	.0501686
173	.2632401	.1572432	1.67	0.094	-.044951	.5714312
study_title						
2	-5.750699	.408887	-14.06	0.000	-6.552103	-4.949295
3	-6.390025	.3365265	-18.99	0.000	-7.049605	-5.730445
4	-6.261358	.339587	-18.44	0.000	-6.926937	-5.59578
5	-6.191757	.338742	-18.28	0.000	-6.855679	-5.527835
6	-5.999788	1.311395	-4.58	0.000	-8.570075	-3.429501
7	-6.373504	.3415898	-18.66	0.000	-7.043008	-5.704001
family_economic_conditions	.3544482	.0762464	4.65	0.000	.205008	.5038884
minutes_to_social	-.0009219	.0005613	-1.64	0.100	-.002022	.0001781
was_positive	-.1056241	.1205559	-0.88	0.381	-.3419093	.1306612
vaccinated	.2180849	.1477899	1.48	0.140	-.0715781	.5077478
marked_effects_covid	.0317377	.0905318	0.35	0.726	-.1457014	.2091768
number_acquaintances_had_covid	.0366722	.032575	1.13	0.260	-.0271736	.1005179
dummy_center	.0204906	.1355784	0.15	0.880	-.2452382	.2862194
dummy_south	.253616	.1601319	1.58	0.113	-.0602367	.5674687
dummy_islands	-.1360392	.1977376	-0.69	0.491	-.5235978	.2515195
abroad	.0760919	.174822	0.44	0.663	-.2665529	.4187368
/cut1	-6.667268	.4533049			-7.55573	-5.778807
/cut2	-6.481956	.4532014			-7.370215	-5.593698
/cut3	-6.225951	.4509237			-7.109745	-5.342156
/cut4	-5.962511	.4463037			-6.83725	-5.087772
/cut5	-5.500478	.4446021			-6.371882	-4.629074
/cut6	-5.016747	.4451599			-5.889245	-4.14425
/cut7	-4.230483	.4457636			-5.104163	-3.356802
/cut8	-3.447406	.4471057			-4.323717	-2.571095
/cut9	-2.664726	.440528			-3.528145	-1.801307

Figure 14. Ordered probit regression considering NoDomNoMem as control treatment (treatment 1) and adding some variables of control.

The sign of the coefficient, in this case is always positive for the values of the 5 dummies. We are comparing the treatment to which the coefficients refer. Compared to the baseline, all treatments belonging to NoDomNegMem are significant with a significance level of 5% and 1% in the two treatments in which we presented the domains with life and memories: YesDomPosMem and YesDomNegMem. Compared to the baseline, both thinking about memories and presenting domains seem to have stimulated life satisfaction apart from in the case of treatment 5. When we give the domains, the level of significance decreases because the level of the p-value decreases considerably. When there are no domains and the memories are negative, respondents tend to increase life satisfaction because the sign of the coefficient is positive even if it is not significant. When we unpack the domains, having thought of a negative memory even becomes highly significant.

Compared to the baseline having domains is important and having positive memories is important. Even more so when we have both positive memories and domains. On the other hand, not having the domains with negative memories is not important and it becomes important when we unpack. Negative memories don't seem to have an impact. We expected negative memories to be much stronger than positive memories and negative memories to have a negative coefficient. The other cross effects, on the other hand, are not significant. These results are in line with the regression performed without the control variables. Compared to the regression analysed previously, the p-value of all 5 dummies has decreased except for YesDomNegMem which however remains highly significant with a significance level of 1%. The joint significance of the regression which is below 0.01, the test is highly significant because Prob > chi2 is 0.0000.

These results therefore confirm what was shown in the first regression. The balance is good for all sizes. When we add all the controls, the treatment coefficients have very different values as well as the p-values. The inclusion or not of additional controls affects the level of significance.

We can therefore infer that, compared to the basic treatment, the presence of the domains is important and having positive memories is important.

The results confirm the resilience theories. When an unhappy event occurs, people try to adapt to this negative event. For this reason, there is no impact of negative memories unless we give the subjects parameters that are more objective such as domains with life to evaluate the event. All comparisons are compared to the baseline. Compared to the control treatment, there is no impact of negative memories, positive memories have a significant impact. Unpacking has a positive impact and is consistent with previous studies (see Angelini, Bertoni and Corazzini, 2016).

We made a comparison within these 5 treatments using a series of binary tests. In this case, none of the binary tests yielded significant results. The comparison between the two treatments in which we asked to think of negative memories that previously had a significance level of 10%, in this analysis with binary tests and control variables is not significant.

3.3 Regressions with the domains of life

We continue our tests with ordered probit regression but this time we use it to analyse the role of the domains of life. Through the regression that follows, we understand how the effect of the 6 main life domains changes as the type of thought recalled changes. We present treatment-by-treatment regressions putting life satisfaction as a dependent variable and domains as an independent variable. We take into consideration the treatments in which the domains with life are present: treatment 2, 4 and 6. For each treatment, we perform an ordered probit regression without checking other parameters and an ordered probit regression also taking into consideration some checks to verify whether the balance is good enough for all sizes. The control variables used are the same as we used in the previous regression.

```
Iteration 0:   log pseudolikelihood = -251.66582
Iteration 1:   log pseudolikelihood = -208.51535
Iteration 2:   log pseudolikelihood = -207.79169
Iteration 3:   log pseudolikelihood = -207.78863
Iteration 4:   log pseudolikelihood = -207.78863

Ordered probit regression                       Number of obs     =        141
                                                Wald chi2(6)      =      64.37
                                                Prob > chi2       =     0.0000
Log pseudolikelihood = -207.78863               Pseudo R2         =     0.1743
```

life_satisfaction	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
satisfaction_economic	.1057525	.0431715	2.45	0.014	.021138	.1903671
satisfaction_family	.0856572	.0609114	1.41	0.160	-.0337271	.2050414
satisfaction_job_career	.1211478	.0619209	1.96	0.050	-.0002151	.2425106
satisfaction_friend	.1726151	.0520415	3.32	0.001	.0706156	.2746146
satisfaction_sentimental_rel	.0652663	.0418655	1.56	0.119	-.0167886	.1473212
satisfaction_health	.1368088	.0509966	2.68	0.007	.0368572	.2367604
/cut1	1.313045	.5895932			.1574632	2.468626
/cut2	1.874437	.5979229			.7025293	3.046344
/cut3	2.230264	.5885108			1.076804	3.383724
/cut4	2.479797	.5991825			1.305421	3.654173
/cut5	3.584276	.6276212			2.354161	4.814391
/cut6	4.101313	.6337			2.859284	5.343342
/cut7	5.097351	.6869951			3.750865	6.443836
/cut8	6.34582	.7285404			4.917907	7.773732
/cut9	7.321295	.7955224			5.7621	8.88049

Figure 15. Ordered probit regression for treatment 2, we use life satisfaction as the dependent variable and the six fundamental domains of life as the independent variable.

The results of the ordered probit regression visible in Figure 15 show how the effect of the domains affects life satisfaction declarations. As we expect, the coefficient of each life domain is positive. Examining the values of the p-value we realize that some domains are more significant and others less significant. The significant parameters concern economic satisfaction, satisfaction with one's job, friendships and health. The domains relating to economic satisfaction and satisfaction with one's work are significant at 5%, while the domains relating to friendship and health are very significant with a level of significance of 1%.

In the treatment in which we did not ask subjects to think of memories the domains with life are significant except for family relationships and romantic relationships that do not have a significant impact on life satisfaction. The other 4 domains are especially significant with regard to friendship and health.

The joint significance of the regression which is below 0.01, the test is highly significant because Prob > chi2 is 0.0000.

```
Iteration 0:   log pseudolikelihood = -251.66582
Iteration 1:   log pseudolikelihood = -188.56333
Iteration 2:   log pseudolikelihood = -186.27397
Iteration 3:   log pseudolikelihood = -186.25997
Iteration 4:   log pseudolikelihood = -186.25997

Ordered probit regression                       Number of obs     =        141
                                                Wald chi2(31)     =     144.82
                                                Prob > chi2       =     0.0000
Log pseudolikelihood = -186.25997               Pseudo R2         =     0.2599
```

life_satisfaction	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
satisfaction_economic	.1140922	.0645824	1.77	0.077	-.0124869	.2406713
satisfaction_family	.1026574	.0576211	1.78	0.075	-.010278	.2155928
satisfaction_job_career	.16759	.0662744	2.53	0.011	.0376945	.2974855
satisfaction_friend	.1763378	.0567825	3.11	0.002	.0650462	.2876294
satisfaction_sentimental_rel	.065321	.0437551	1.49	0.135	-.0204374	.1510794
satisfaction_health	.1873545	.048813	3.84	0.000	.0916828	.2830261
female	-.1208416	.2382767	-0.51	0.612	-.5878554	.3461722
age	-.006451	.0098073	-0.66	0.511	-.025673	.012771
work						
165	-1.08242	.7029935	-1.54	0.124	-2.460262	.2954216
166	-.381777	.4605586	-0.83	0.407	-1.284455	.5209012
167	-.2771171	.3644743	-0.76	0.447	-.9914737	.4372395
168	-.2180879	.4463537	-0.49	0.625	-1.092925	.6567493
169	.6738712	.5408396	1.25	0.213	-.386155	1.733897
170	-1.061221	.7396564	-1.43	0.151	-2.510921	.3884791
171	-.5725689	.743735	-0.77	0.441	-2.030263	.8851249
172	-1.233441	1.475749	-0.84	0.403	-4.125856	1.658973
173	-.3355653	.4090294	-0.82	0.412	-1.137248	.4661177
study_title						
3	-2.850708	.964119	-2.96	0.003	-4.740346	-.9610691
4	-2.179653	.9893748	-2.20	0.028	-4.118792	-.240514
5	-2.226135	1.006145	-2.21	0.027	-4.198143	-.254126
7	-2.3764	.9925186	-2.39	0.017	-4.321701	-.4310991
family_economic_conditions	-.0300978	.1766505	-0.17	0.865	-.3763264	.3161308
minutes_to_social	-.0004391	.0019728	-0.22	0.824	-.0043058	.0034276
was_positive	.4642974	.236019	1.97	0.049	.0017087	.9268861
vaccinated	-.0610988	.3974789	-0.15	0.878	-.8401432	.7179455
marked_effects_covid	.2293062	.2187511	1.05	0.295	-.199438	.6580505
number_acquaintances_had_covid	.0809132	.0740994	1.09	0.275	-.0643188	.2261453
dummy_center	.5761424	.539597	1.07	0.286	-.4814483	1.633733
dummy_south	.8904816	.4324491	2.06	0.039	.042897	1.738066
dummy_islands	.0285021	.4254171	0.07	0.947	-.8053002	.8623044
abroad	.403059	.4892542	0.82	0.410	-.5558617	1.36198
/cut1	-1.164506	1.293546			-3.69981	1.370798
/cut2	-.4983362	1.262985			-2.973742	1.97707
/cut3	-.0468727	1.283577			-2.562638	2.468893
/cut4	.2924935	1.271504			-2.199608	2.784595
/cut5	1.666957	1.256102			-.7949574	4.12887
/cut6	2.271262	1.243186			-.1653383	4.707862
/cut7	3.435472	1.250645			.9842532	5.886691
/cut8	4.955448	1.264694			2.476693	7.434203
/cut9	6.073908	1.273779			3.577347	8.570469

Figure 16. Ordered probit regression of treatment 2 also taking into account the variables of control. We use life satisfaction as a dependent variable and the six fundamental domains of life as an independent variable.

Figure 16 shows us that the impact of domains is important. The coefficient of each domain of life is positive. The impact is highly significant for the domains relating to friendship and health, which have a significance level of 1%. The level of significance is 5% for job satisfaction and marginally significant for economic satisfaction which has a p-value of less than 10%.

These results are in line with the regression performed without the control variables except for some parameters. The level of significance of the domain concerning satisfaction with the family, which in the regression in which the control variables are present, is significant at 10% and in the previous regression it is not significant. The domain of economic satisfaction, on the other hand, has become marginally significant, passing from a significance level of 5% in the previous analysis to 10%. The domain regarding romantic relationships remains not significant.

The balance is good enough for most sizes. The inclusion or not of additional controls affects the level of significance with regard to satisfaction with the family and slightly for the variable regarding economic satisfaction.

The joint significance of the regression which is below 0.01, the test is highly significant because Prob> chi2 is 0.0000.

These results confirm what was shown in the first regression. We can therefore deduce that the presence of domains is important for 4 domains of life: economic satisfaction, satisfaction with one's work, friendships and health. The presence of the domains is also important for family relationships only for one of the two regressions we performed.

We proceed with the analysis of the treatment in which we gave the domains and asked to remember three happy events.

```
Iteration 0:   log pseudolikelihood = -188.43994
Iteration 1:   log pseudolikelihood = -145.02084
Iteration 2:   log pseudolikelihood = -144.03215
Iteration 3:   log pseudolikelihood = -144.02986
Iteration 4:   log pseudolikelihood = -144.02986

Ordered probit regression                       Number of obs     =        103
                                                Wald chi2(6)      =      62.04
                                                Prob > chi2       =     0.0000
Log pseudolikelihood = -144.02986               Pseudo R2         =     0.2357
```

life_satisfaction	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
satisfaction_economic	.0789284	.0494429	1.60	0.110	-.017978	.1758347
satisfaction_family	.1164551	.0729935	1.60	0.111	-.0266095	.2595196
satisfaction_job_career	.1144109	.0677439	1.69	0.091	-.0183648	.2471865
satisfaction_friend	.2334515	.0645099	3.62	0.000	.1070144	.3598886
satisfaction_sentimental_rel	.1506326	.0589053	2.56	0.011	.0351804	.2660849
satisfaction_health	.0951446	.105655	0.90	0.368	-.1119354	.3022245
/cut1	2.577685	.8997457			.8142164	4.341155
/cut2	3.150884	.8864491			1.413475	4.888292
/cut3	3.898859	.9054739			2.124163	5.673555
/cut4	4.714374	.9477224			2.856872	6.571876
/cut5	6.040465	1.072335			3.938727	8.142203
/cut6	7.08658	1.15655			4.819784	9.353376
/cut7	7.948741	1.264997			5.469393	10.42809

Figure 17. Ordered probit regression for treatment 4, we use life satisfaction as the dependent variable and the six fundamental domains of life as the independent variable.

The effect of the domains affects the life satisfaction statements as shown by the results of the ordered probit regression visible in Figure 17. As we expect, the coefficient of each domain of life is positive. The significant parameters concern satisfaction with the job, friendships and romantic relationships. The domains concerning job satisfaction are marginally significant, the level of significance is 10% while the domain concerning romantic relationships is significant at 5% and the satisfaction of friendship relationships is highly significant with a significance level of 1%.

In the treatment in which we asked the subjects to think about happy memories, the domains with life are significant especially with regard to satisfaction with friendships. This is true except for financial satisfaction, family relationships and health, which do not have a significant impact on life satisfaction.

The joint significance of the regression which is below 0.01, the test is highly significant because Prob> chi2 is 0.0000.

```
Iteration 0:   log pseudolikelihood = -184.41069
Iteration 1:   log pseudolikelihood = -125.78609
Iteration 2:   log pseudolikelihood = -122.48793
Iteration 3:   log pseudolikelihood = -122.44426
Iteration 4:   log pseudolikelihood = -122.43818
Iteration 5:   log pseudolikelihood = -122.43752
Iteration 6:   log pseudolikelihood = -122.43739
Iteration 7:   log pseudolikelihood = -122.43737
Iteration 8:   log pseudolikelihood = -122.43736

Ordered probit regression                       Number of obs     =        101
                                                Wald chi2(30)     =          .
                                                Prob > chi2       =          .
Log pseudolikelihood = -122.43736               Pseudo R2         =     0.3361
```

life_satisfaction	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
satisfaction_economic	.0183277	.0605512	0.30	0.762	-.1003504	.1370059
satisfaction_family	.1035066	.0957792	1.08	0.280	-.0842172	.2912305
satisfaction_job_career	.1454267	.0790569	1.84	0.066	-.0095219	.3003753
satisfaction_friend	.3187497	.0808736	3.94	0.000	.1602404	.477259
satisfaction_sentimental_rel	.1913268	.0635013	3.01	0.003	.0668665	.3157871
satisfaction_health	.1905307	.1150024	1.66	0.098	-.0348698	.4159312
female	-.0796913	.3042124	-0.26	0.793	-.6759366	.5165541
age	.0286884	.0106806	2.69	0.007	.0077548	.049622
work						
165	-1.057112	.6891146	-1.53	0.125	-2.407751	.2935283
166	-.9213325	.3892901	-2.37	0.018	-1.684327	-.158338
167	.0774201	.3948542	0.20	0.845	-.6964799	.8513201
168	.7477395	.4431014	1.69	0.092	-.1207232	1.616202
169	-.0892571	.6019676	-0.15	0.882	-1.269092	1.090578
170	-.1217138	.7489573	-0.16	0.871	-1.589643	1.346216
171	-1.586129	.591502	-2.68	0.007	-2.745452	-.4268062
173	-.3910738	.5231053	-0.75	0.455	-1.416341	.6341937
study_title						
3	-.0928868	.51881	-0.18	0.858	-1.109736	.9239622
4	-.4574613	.5605712	-0.82	0.414	-1.556161	.641238
5	.2103109	.7326875	0.29	0.774	-1.22573	1.646352
6	4.115519	.736801	5.59	0.000	2.671415	5.559622
7	-.1603387	.5275457	-0.30	0.761	-1.194309	.8736319
family_economic_conditions	.0089997	.2510134	0.04	0.971	-.4829774	.5009769
minutes_to_social	.0007438	.0014602	0.51	0.610	-.0021182	.0036059
was_positive	-.3440763	.2858251	-1.20	0.229	-.9042833	.2161307
vaccinated	.296738	.4204739	0.71	0.480	-.5273757	1.120852
marked_effects_covid	-.5439178	.3670289	-1.48	0.138	-1.263281	.1754456
number_acquaintances_had_covid	.125916	.1351234	0.93	0.351	-.1389211	.390753
dummy_center	-.2918838	.4059503	-0.72	0.472	-1.087532	.5037642
dummy_south	-1.355595	.5969631	-2.27	0.023	-2.525622	-.1855691
dummy_islands	.4954158	.495009	1.00	0.317	-.474784	1.465616
abroad	-.1811016	.3399128	-0.53	0.594	-.8473184	.4851152
/cut1	4.337419	1.241716			1.9037	6.771138
/cut2	4.866415	1.216348			2.482418	7.250413
/cut3	5.725145	1.219403			3.335158	8.115131
/cut4	6.738599	1.304062			4.182684	9.294514
/cut5	8.307242	1.40801			5.547594	11.06689
/cut6	9.694449	1.473956			6.805549	12.58335
/cut7	10.86037	1.567012			7.789086	13.93166

Figure 18. Ordered probit regression of treatment 4 also taking into account some variables of control. We use life satisfaction as a dependent variable and the six fundamental domains of life as an independent variable.

Figure 18 shows us that the coefficient of each life domain is positive. The impact is highly significant for domains concerning romantic relationships and friendships that have a significance level of 1%. Significance is marginal for job satisfaction and health, which have a p-value of less than 10%.

These results are in line with the regression performed without the control variables (Figure 17) except for the health variable, which in this regression becomes significant for a level of 10%. Compared to the regression analysed previously, the level of significance of the domain regarding sentimental relationships has dropped slightly, reaching a level of significance of 1% compared to the 5% found in the previous regression. The domains concerning economic satisfaction, relationships with family and health as in the previous regression do not have a significant impact on life satisfaction.

The joint significance of the regression, which is below 0.01, the test is highly significant.

These results largely confirm what was shown in the first regression. We can say that the balance is good enough for most sizes. Only with regard to the health variable and the domain concerning romantic relationships, the inclusion or not of the additional controls influences the level of significance.

We can therefore infer that the presence of domains is important when people have positive memories for 3 domains of life: satisfaction with their work, friendships and romantic relationships.

We compare the results obtained when the domains are present in case we did not ask for memories with the ones obtained when we asked to think about 3 happy memories. We focus our attention on the results obtained in Figure 16 and Figure 18.

Treatment 2 - Yes domains, no memories		Treatment 4 - Yes domains, positive memories	
Variables	Level of significance	Variables	Level of significance
Economic	10%	Economic	It is not significant
Family	10%	Family	It is not significant
Job career	5%	Career	10%
Friend	1%	Friend	1%
Sentimental rel	It is not significant	Sentimental rel	1%
Health	1%	Health	10%

Table 6. Significance results of the regressions with the covariates of treatment 2, in which we gave the domains but we did not ask for any recollection and of treatment 4 in which we gave the domains and we asked to think about 3 events happy.

Table 6 shows the information that may be most useful for us to make a comparison, for each domain between when we didn't ask for the memories and when we asked for 3 positive memories. In the regressions considered, the coefficients of all domains are positive.

We focus on why the presence of domains makes sentimental relationship more important as significance. Probably for many respondents sentimental relationship and the domain concerning the family coincide because during the period of Covid-19 in many cases the boyfriend, girlfriend, husband or wife was part of the family itself. The regressions carried out show that without the memories the dominion over the family was marginally significant while with the happy memories it becomes insignificant but it is a slight change. Sentimental relationship, on the other hand, becomes highly significant when we ask subjects to think about happy memories. Sentimental relationship becomes extremely important when we ask to remember happy events. These data tell us that having given positive domains has increased the overall stable parental affections because even if we have a very slight loss of significance of family, which even when we do not ask the memories is only marginally significant, with the introduction of positive sentimental relationship

memories becomes highly significant. While, on the other hand, with positive memories, the economic and job/career aspect becomes less important. An interesting finding is that positive memories have brought out even more the importance of variables linked to stable emotional relationships and this corresponds to a downsizing of the significance of career domains, the economic and health aspect in which emotional ties are less important. .

In the questionnaire, we always gave to the individuals, a frame in which we talked about the lockdown. Respondents who didn't recall the memories, probably associated the frame we gave them with something that caused the lockdown: a health problem. When we do remember positive events, subjects think about family but forget about health, which is not meaningful with happy memories. The change in the level of significance of health in the two treatments examined is what is called the focusing illusion effect. When we remember happy events, the importance of a variable, in this case health, vanishes and the fear for health disappears.

We proceed with the analysis of the treatment in which we gave the domains and asked to remember three unhappy events.

```
Iteration 0:   log pseudolikelihood = -191.93746
Iteration 1:   log pseudolikelihood = -154.58991
Iteration 2:   log pseudolikelihood = -153.84659
Iteration 3:   log pseudolikelihood = -153.84154
Iteration 4:   log pseudolikelihood = -153.84154

Ordered probit regression                       Number of obs     =        108
                                                Wald chi2(6)      =      61.32
                                                Prob > chi2       =     0.0000
Log pseudolikelihood = -153.84154               Pseudo R2         =     0.1985
```

life_satisfaction	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
satisfaction_economic	.0143175	.0604375	0.24	0.813	-.1041378	.1327729
satisfaction_family	.0282662	.0690089	0.41	0.682	-.1069889	.1635212
satisfaction_job_career	.190884	.0707872	2.70	0.007	.0521435	.3296245
satisfaction_friend	.1129207	.0710132	1.59	0.112	-.0262627	.2521041
satisfaction_sentimental_rel	.1842286	.0473316	3.89	0.000	.0914604	.2769969
satisfaction_health	.1716878	.0658744	2.61	0.009	.0425764	.3007992
/cut1	1.683054	.7743813			.1652951	3.200814
/cut2	2.013062	.7544019			.5344613	3.491662
/cut3	2.483972	.7947901			.9262124	4.041732
/cut4	3.377215	.7938635			1.821271	4.933159
/cut5	4.206929	.8216033			2.596616	5.817242
/cut6	5.489432	.8932078			3.738777	7.240087
/cut7	6.34633	.9534811			4.477542	8.215119
/cut8	7.379713	.9717495			5.475119	9.284307

Figure 19. Ordered probit regression for treatment 6, we use life satisfaction as the dependent variable and the six fundamental domains of life as the independent variable.

The results of the ordered probit regression visible in Figure 19 show how the effect of the domains affects the life satisfaction declarations. As we expect, the coefficient of each life domain is positive. By examining the values concerning significance we realize that the significant domains are 3: satisfaction with job, romantic relationships and health. All three of these domains are highly significant with a significance level of 1%. The domains concerning economic satisfaction, relationships with family members and friendship are not significant with a p-value higher than 10%.

In treatment 6, in which we asked subjects to think about negative memories, the domains with life are highly significant for three domains: job satisfaction, romantic relationships and health. The other three domains, on the other hand, do not have a significant impact on life satisfaction.

The joint significance of the regression which is below 0.01, the test is highly significant because Prob > chi2 is 0.0000.

We show below if and how by adding variables these results change.

```
Iteration 0:   log pseudolikelihood = -191.93746
Iteration 1:   log pseudolikelihood = -138.33238
Iteration 2:   log pseudolikelihood = -135.99756
Iteration 3:   log pseudolikelihood = -135.97482
Iteration 4:   log pseudolikelihood =  -135.9748
Iteration 5:   log pseudolikelihood =  -135.9748

Ordered probit regression                       Number of obs     =        108
                                                Wald chi2(30)     =          .
                                                Prob > chi2       =          .
Log pseudolikelihood =  -135.9748               Pseudo R2         =     0.2916
```

life_satisfaction	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
satisfaction_economic	-.1277192	.0761189	-1.68	0.093	-.2769096	.0214711
satisfaction_family	.0064974	.078034	0.08	0.934	-.1464465	.1594413
satisfaction_job_career	.2939101	.0799943	3.67	0.000	.1371241	.450696
satisfaction_friend	.1399101	.0755117	1.85	0.064	-.00809	.2879102
satisfaction_sentimental_rel	.2677038	.0570268	4.69	0.000	.1559332	.3794743
satisfaction_health	.1162717	.0752153	1.55	0.122	-.0311475	.2636909
female	.4057893	.2797852	1.45	0.147	-.1425797	.9541583
age	-.0060821	.0103793	-0.59	0.558	-.0264251	.0142608
work						
165	.8226583	.4954575	1.66	0.097	-.1484205	1.793737
166	-.0429554	.4204115	-0.10	0.919	-.8669468	.7810359
167	-.1862565	.4554378	-0.41	0.683	-1.078898	.7063852
168	-.9290532	.8397079	-1.11	0.269	-2.574851	.716744
169	-.5290383	.8497871	-0.62	0.534	-2.19459	1.136514
170	-.7080666	.6605619	-1.07	0.284	-2.002744	.5866109
171	.9813159	.861569	1.14	0.255	-.7073282	2.66996
172	-.4470928	.9175495	-0.49	0.626	-2.245457	1.351271
173	-.0320912	.4517777	-0.07	0.943	-.9175592	.8533768
study_title						
3	-.2535028	.6241383	-0.41	0.685	-1.476791	.9697858
4	-.3112101	.5991495	-0.52	0.603	-1.485521	.8631014
5	.3500596	.6283802	0.56	0.577	-.881543	1.581662
7	-.3880984	.6505179	-0.60	0.551	-1.66309	.8868932
family_economic_conditions	.8450364	.2751661	3.07	0.002	.3057208	1.384352
minutes_to_social	-.0062304	.0016294	-3.82	0.000	-.0094239	-.0030369
was_positive	.0282512	.6279238	0.04	0.964	-1.202457	1.258959
vaccinated	.1027269	.6369286	0.16	0.872	-1.14563	1.351084
marked_effects_covid	.3734609	.3113638	1.20	0.230	-.236801	.9837227
number_acquaintances_had_covid	-.2013816	.1049674	-1.92	0.055	-.4071139	.0043507
dummy_center	-.5551412	.4673481	-1.19	0.235	-1.471127	.3608441
dummy_south	-1.507152	.6124064	-2.46	0.014	-2.707447	-.3068579
dummy_islands	-.2205802	.7744868	-0.28	0.776	-1.738546	1.297386
abroad	-.4391956	.5097647	-0.86	0.389	-1.438316	.5599249
/cut1	2.274475	1.550604			-.7646528	5.313602
/cut2	2.698256	1.5035			-.2485499	5.645062
/cut3	3.323718	1.506301			.3714224	6.276014
/cut4	4.495818	1.4785			1.59801	7.393625
/cut5	5.522938	1.514216			2.555129	8.490746
/cut6	6.981832	1.571322			3.902098	10.06157
/cut7	7.966835	1.615239			4.801024	11.13264
/cut8	9.357744	1.623509			6.175725	12.53976

Figure 20. Ordered probit regression of treatment 6 also taking into account some variables of control. We use life satisfaction as a dependent variable and the six fundamental domains of life as an independent variable.

Figure 20 shows us that the impact of domains is important. The coefficient of each domain of life is positive except for one domain. The domain concerning economic satisfaction has a negative coefficient. When there are domains but the memory is negative, positive economic satisfaction even tends to decrease life satisfaction because the sign of the coefficient is negative and significant. For this domain, the p-value has a value of less than 10% so the impact of these two parameters is marginally significant. Along with satisfaction with family, two other domains also do not have a significant impact: friendships and health. These three domains therefore do not have an impact on the answers given for life satisfaction. The

impact, on the other hand, is highly significant for the domains concerning job satisfaction and romantic relationships that have a significance level of 1%.

These results are in line with the regression performed without the control variables. The balance is quite good: 2 out of 5 variables have a different level of significance. When we add all the variables of control, the health domain is no longer significant and the variable regarding economic satisfaction, which in the previous regression was not significant, now is marginally significant for a level of 10%.

The joint significance of the regression which is below 0.01, the test is highly significant because Prob> chi2 is 0.0000.

These results confirm what was shown in the first regression except for the health domain. We can therefore deduce that the presence of domains, in the presence of unhappy memories, is important for 2 domains of life: satisfaction with job and sentimental relationships.

In line with what has been done in the explanation of table 6, we compare the results obtained when the domains are present in the case in which we have not asked for memories compared to when we have asked to think about 3 unhappy memories. The values in table 7 are the result of processing the results obtained from two regressions: those represented in Figure 16 and Figure 20.

Treatment 2 - Yes domains, no memories		Treatment 6 - Yes domains, negative memories	
Variables	Level of significance	Variables	Level of significance
Economic	10%	Economic	10%
Family	10%	Family	It is not significant
Job career	5%	Career	1%
Friend	1%	Friend	It is not significant
Sentimental rel	It is not significant	Sentimental rel	1%
Health	1%	Health	It is not significant

Table 7. Significance results of the regressions with the covariates of treatment 2, in which we gave the domains but we did not ask for any recollection and of treatment 6 in which we gave the domains and we asked to think about 3 events unhappy.

Table 7 shows the information that may be most useful for us to make a comparison, for each domain between when we did not ask for memories and when we asked to report 3 negative memories. In the regressions taken into consideration the coefficients of all the domains are positive except for economic which is negative only when we have given negative memories however it is only marginally significant so we do not consider it a relevant result.

Sentimental relationship becomes significant at 1%. Among our subjects there are many students, during the lockdown period they may have missed their boyfriend or girlfriend and for this reason a sentimental relationship becomes important for them. It could be an example of what is called the illusory focus effect in psychology. When we remember unhappy events, the importance of a variable, in this case health, vanishes and the fear for health disappears. When we ask for negative memories, respondents remember that they lacked a girlfriend in quarantine and for this reason, they give more importance to sentimental relationships and forget the importance of other factors such as health and friends. In the memories, the respondent reported that during the quarantine they kept in touch with friends also through online games or phone calls and therefore may have missed them less. Health without memories, it

is significant because we gave a frame on Covid-19 that made respondents immediately think about the disease. When we ask to report three negative events, people think not about health but of the negative emotions of isolation and loneliness (as we will see shortly in the content analysis). An interesting result is that negative memories have brought out even more the importance of emotions related to lack and isolation that led them to give more importance to the sentimental relationship they missed during the quarantine. This corresponds to a downsizing of the significance of the domains of friends and health.

3.4 Expectations of life satisfaction - regressions with treatment dummies

We concluded the analysis regarding the life satisfaction values obtained thanks to the survey. We now proceed by comparing what was shown for life satisfaction with the results for life satisfaction expectations.

As we did for the life satisfaction analysis, we calculate the average, the standard deviation and the number of observations for each treatment.

Treatment	*Mean*	*Standard deviation*	*Observations*	*Percentage observations*
1	6.407895	1.571077	152	20.85%
2	6.51773	1.755004	141	19.34%
3	6.737288	1.66116	118	16.19%
4	6.941748	1.545552	103	14.13%
5	6.439252	1.818031	107	14.68%
6	6.787037	1.353783	108	14.81%

Table 8. Definition of expectation of life satisfaction level for the 6 treatments.

Table 8 shows mean, standard deviation, number of observations and the percentage of the number of observations in our sample made up of 729 user responses.

In figure 21, we used a graphical representation to be able to visually notice the differences in the expectation of life satisfaction for each of the six treatments.

Table 8 and Figure 21 show an interesting result for the treatments in which we asked to report satisfaction for each single domain of life. As for life satisfaction, we can see that in treatment 5 and 6, with unhappy memories, the levels of expectation of life satisfaction are lower than in treatment 3 and 4 in which we did recall happy memories. Also in the analysis of the expectation of life satisfaction we found a higher average value for treatment 6. The result as regards the average of expectations differs from what was found in the average of life satisfaction but is in line with our expectations. In fact, we expected that the average of life satisfaction and expectation of life satisfaction would be higher with the presence of positive memories than when negative memories are present.

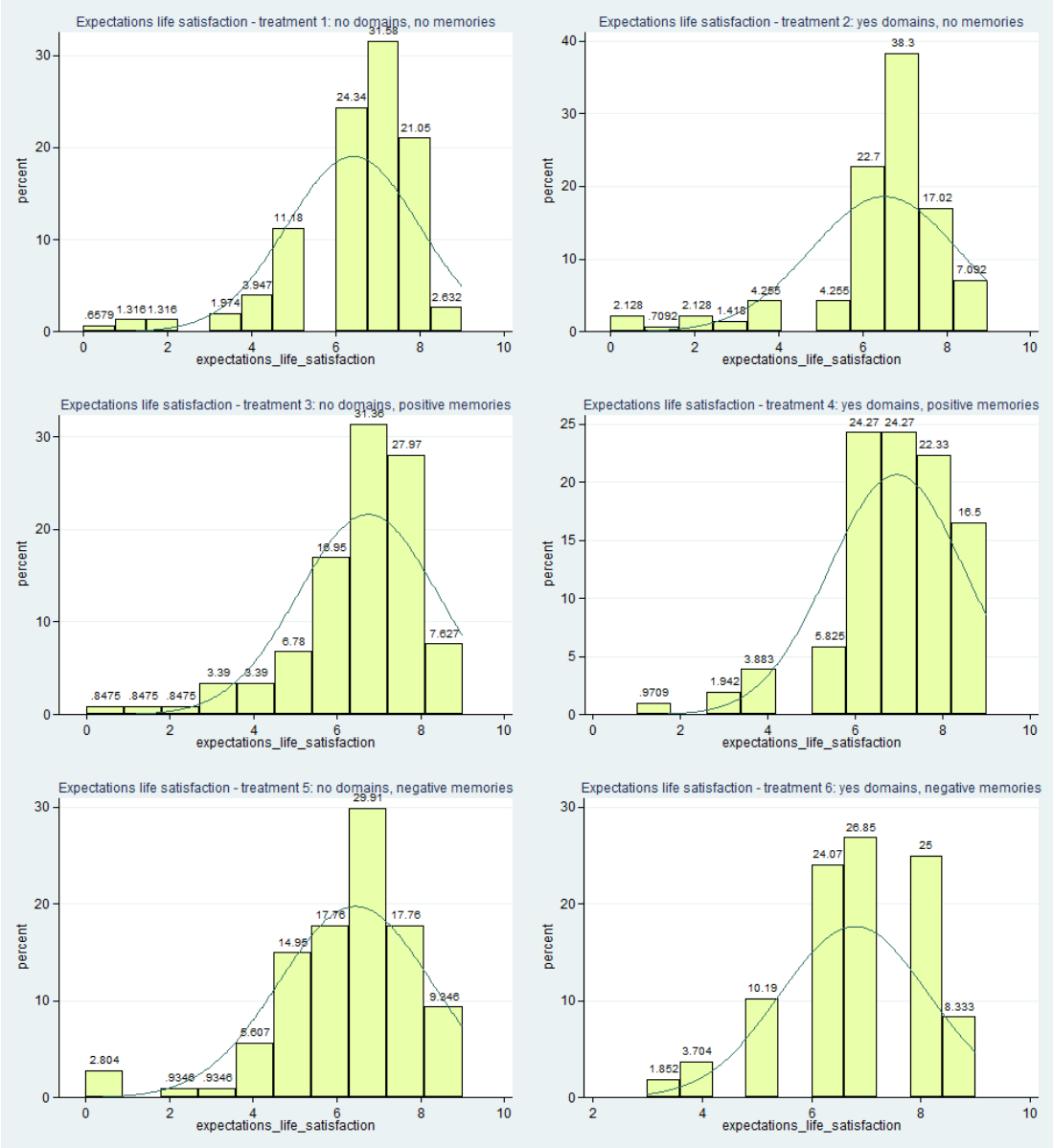


Figura 21. Histogram of the level of expectation of life satisfaction for each of the 6 treatments.

In our experiment, the histograms and the average value of the expectation of life satisfaction for each treatment do not show an effect different from the one we expected as regards the presence of the domains. In fact, we can observe in Table 8 that among the unpacked treatments (treatments 2, 4 and 6) the respondents to whom we have made think of positive memories appear to have given a higher average value. If we put in order by value of expectation of life satisfaction, the least satisfied subjects among those to whom we have also asked the level of satisfaction for each fundamental domain of life, are those who have not remembered any memory (treatment 2) with an average value of 6.51. Subjects who recalled negative events

(treatment 6) have an average expectation of life satisfaction value of 6.79 while, in the first place, the average life satisfaction value of those who recalled positive events is 6.94. As found in the life satisfaction values, also for expectation of life satisfaction the lowest level, as regards the mean, is of the treatment in which we did not ask to remember any memory.

In the treatments in which we have not mentioned the domains with life (treatment 1, 3 and 5), as regards the mean, we have similar results. In this case, if we sort the treatments in ascending order based on the life satisfaction value, we can see that treatment 1, in which the subjects did not remember any memories, has the lowest value (6.41). Treatment 5 in which the subjects had thought of a negative memory had an average life satisfaction value of 6.44 while the subjects who remembered a happy moment (treatment 3) reported the higher average life satisfaction value between these three treatments: 6.73. This result is in line with what we have found for the life satisfaction values.

We can also note that in the treatments in which the unpacking took place, the treatments in which we asked to report satisfaction for the six life domains, all have an average expectation of life satisfaction value that is somewhat higher than the treatments in which domains with life were not mentioned. This is also an interesting result also found in the life satisfaction values and which confirms our forecasts.

Finally, we can note that the average values of expectation of life satisfaction are all higher when compared with those of life satisfaction. From these first results, in all treatments the respondents on average seem optimistic about the future and think that in 12 months their level of life satisfaction will be higher than the current one. We perform significance tests to verify if these results are also significant from a statistical point of view.

To be consistent with the analyses we have carried out previously, we present two ordered probit regressions: the first (Figure 22) has among the regressors only the treatment dummies and the second (Figure 24) in addition to the treatment dummies also has the control variables.

```
. oprobit expectations_life_satisfaction YesDomNoMem NoDomPosMem YesDomPosMem NoDomNegMem YesDomNegMem, robust

Iteration 0:   log pseudolikelihood = -1296.8317
Iteration 1:   log pseudolikelihood = -1290.7889
Iteration 2:   log pseudolikelihood = -1290.7887

Ordered probit regression                       Number of obs     =        729
                                                Wald chi2(5)      =      12.10
                                                Prob > chi2       =     0.0335
Log pseudolikelihood = -1290.7887               Pseudo R2         =     0.0047
```

expectations_life_satisfaction	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
YesDomNoMem	.1108694	.1142817	0.97	0.332	-.1131187	.3348575
NoDomPosMem	.2594362	.1222955	2.12	0.034	.0197415	.499131
YesDomPosMem	.3982213	.1331183	2.99	0.003	.1373143	.6591283
NoDomNegMem	.0643917	.1308785	0.49	0.623	-.1921256	.3209089
YesDomNegMem	.2397881	.1204444	1.99	0.046	.0037214	.4758549
/cut1	-2.144236	.1423022			-2.423143	-1.865329
/cut2	-1.951146	.1273789			-2.200804	-1.701488
/cut3	-1.767938	.1143594			-1.992079	-1.543798
/cut4	-1.524103	.1022039			-1.724419	-1.323787
/cut5	-1.199214	.0908776			-1.37733	-1.021097
/cut6	-.7747589	.0845219			-.9404188	-.6090989
/cut7	-.1085642	.0810612			-.2674413	.0503128
/cut8	.6980456	.0825796			.5361926	.8598986
/cut9	1.577988	.0920934			1.397488	1.758488

Figure 22. Ordered probit regression considering NoDomNoMem as control treatment (treatment 1).

Figure 22 shows that the Prob value > chi2 = 0.0335 and therefore a significance level of 5%. The joint significance of the regression is significant.

We can see that in the regression in Figure 22, the sign of the coefficient is always positive. Compared to the baseline, NoDomPosMem and YesDomNegMem are significant with a significance level of 5% and YesDomPosMem has a significance level of 1%. Compared to the baseline, thinking about positive memories and presenting the domains belonging to NoDomNegMem seem to have marginally stimulated life satisfaction. When we have happy memories and domains are present, the p-value level drops significantly. When there are no domains but the memory is negative, they even tend to increase expectation of life satisfaction because the sign of the coefficient is positive but not significant. Comparing these results with those obtained for life satisfaction, YesDomNoMem with expectation of life satisfaction is no longer significant and YesDomNegMem is no longer highly significant here.

Now we make the internal comparison between these 5 treatments. For this reason we proceed with a series of binary tests.

```
[expectations_life_satisfaction]YesDomNoMem - [expectations_life_satisfaction]YesDomPosMem = 0

    chi2(  1) =    4.23
  Prob > chi2 =    0.0396
```

Figure 23. Binary test between treatment 2 and 4.

The binary test in Figure 23 shows that, when there are domains, the expected life satisfaction increases with positive memories compared to when there are no memories. When you give domains and positive memories, people give you a higher expected life satisfaction than when people don't recall memories.

The test between YesDomPosMem and NoDomNegMem is marginally positive but it is crossed and for this reason, we do not consider it.

We just performed a regression without checking any other parameters. Now we use the same ordered probit regression by adding some controls. To remain consistent with the previous analyses, we have chosen to use the same control variables chosen for the regression concerning life satisfaction carried out previously.

```
Iteration 0:   log pseudolikelihood = -1291.8712
Iteration 1:   log pseudolikelihood = -1247.4097
Iteration 2:   log pseudolikelihood = -1247.1758
Iteration 3:   log pseudolikelihood = -1247.1572
Iteration 4:   log pseudolikelihood = -1247.1553
Iteration 5:   log pseudolikelihood =  -1247.155
Iteration 6:   log pseudolikelihood = -1247.1549
Iteration 7:   log pseudolikelihood = -1247.1549

Ordered probit regression                       Number of obs     =        727
                                                Wald chi2(32)     =     818.75
                                                Prob > chi2       =     0.0000
Log pseudolikelihood = -1247.1549               Pseudo R2         =     0.0346
```

expectations_life_satisfaction	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
YesDomNoMem	.1123627	.1171726	0.96	0.338	-.1172913	.3420167
NoDomPosMem	.3035908	.1245411	2.44	0.015	.0594948	.5476868
YesDomPosMem	.43739	.1339396	3.27	0.001	.1748733	.6999067
NoDomNegMem	.1123214	.1343826	0.84	0.403	-.1510637	.3757065
YesDomNegMem	.2403077	.1258569	1.91	0.056	-.0063674	.4869828
female	.0389846	.0876981	0.44	0.657	-.1329005	.2108697
age	-.0105906	.004191	-2.53	0.012	-.0188048	-.0023763
work						
165	.0367757	.3469275	0.11	0.916	-.6431897	.7167412
166	-.0123575	.1452628	-0.09	0.932	-.2970673	.2723524
167	.2341777	.1482764	1.58	0.114	-.0564386	.524794
168	.4807391	.1964892	2.45	0.014	.0956274	.8658508
169	.2880248	.2684126	1.07	0.283	-.2380542	.8141038
170	.5228926	.2791842	1.87	0.061	-.0242983	1.070083
171	-.440322	.1965417	-2.24	0.025	-.8255366	-.0551074
172	-.695592	.4113654	-1.69	0.091	-1.501853	.1106693
173	.203297	.1670223	1.22	0.224	-.1240607	.5306547
study_title						
2	-5.911284	.3974367	-14.87	0.000	-6.690246	-5.132322
3	-6.262225	.3440362	-18.20	0.000	-6.936523	-5.587926
4	-6.174366	.3443518	-17.93	0.000	-6.849284	-5.499449
5	-6.167143	.3388839	-18.20	0.000	-6.831343	-5.502943
6	-5.95793	.4184774	-14.24	0.000	-6.778131	-5.137729
7	-6.185186	.3477672	-17.79	0.000	-6.866797	-5.503575
family_economic_conditions	.3858339	.0789231	4.89	0.000	.2311475	.5405202
minutes_to_social	-.0001949	.0005742	-0.34	0.734	-.0013203	.0009306
was_positive	-.0762211	.1312932	-0.58	0.562	-.333551	.1811088
vaccinated	.0978599	.1500172	0.65	0.514	-.1961684	.3918883
marked_effects_covid	-.0319841	.0898228	-0.36	0.722	-.2080336	.1440655
number_acquaintances_had_covid	.0411713	.0348408	1.18	0.237	-.0271153	.1094579
dummy_center	.0998542	.1538152	0.65	0.516	-.2016181	.4013265
dummy_south	.1057704	.1739692	0.61	0.543	-.2352029	.4467437
dummy_islands	-.0360835	.1971272	-0.18	0.855	-.4224457	.3502786
abroad	-.0042884	.190782	-0.02	0.982	-.3782142	.3696374
/cut1	-7.380705	.4573247			-8.277045	-6.484365
/cut2	-7.156437	.4502859			-8.038981	-6.273893
/cut3	-6.945297	.445377			-7.81822	-6.072375
/cut4	-6.673094	.4411452			-7.537722	-5.808465
/cut5	-6.324091	.4346267			-7.175944	-5.472239
/cut6	-5.87976	.43323			-6.728875	-5.030644
/cut7	-5.17562	.4320634			-6.022448	-4.328791
/cut8	-4.327557	.4318247			-5.173918	-3.481196
/cut9	-3.394714	.4261693			-4.229991	-2.559438

Figure 24. Ordered probit regression considering NoDomNoMem as control treatment (treatment 1) and adding control variables.

Figure 24 shows that the joint significance of the regression is highly significant because Prob> Chi2 is 0.00.

We can see how the results of this regression are similar to those of the ordered probit regression on expectation of life satisfaction in which the control variables are not present. We have a small change only for YesDomNegMem, which becomes significant at 10%. Without the YesDomNegMem controls it was significant at 5% while now at 10% but for a few cents. This result confirms that the data of our sample are well balanced.

We can say that when we have expectation of life satisfaction, having positive memories is important and the presence of the domains is only important if we ask respondents to think about three memories, whether they are positive or negative. In treatments with positive memories, expectations increase. Unpacking also seems to work much less.

```
[expectations_life_satisfaction]YesDomNoMem - [expectations_life_satisfaction]YesDomPosMem = 0

    chi2(  1) =    5.25
  Prob > chi2 =    0.0219
```

Figure 25. Binary test between treatment 2 and 4.

The results of these binary tests are also the same as those in which there are no control variables so the balance is very good. From binary tests, we can deduce that we give domains and give positive memories people give you a higher expected life satisfaction than when people have no memories.

We can say that the results on life satisfaction expectations are consistent with our expectations because, on average, the expectations of satisfaction with life have higher values than those of satisfaction with life. We also found that judgments about life expectation are higher when we remember happy memories than when we give unhappy memories contrary to what we have shown in life satisfaction results. In the basic treatment, in which life satisfaction has the lowest average rating, we had the most important increase in the expectation of life satisfaction compared to the value of life satisfaction. Probably this is due to the fact that the people in this treatment were more manipulated by the introduction we made on Covid-19 and for this reason they gave lower ratings of life satisfaction. This result also confirms what we

expected because according to Maurizio Bovi's paper (2009) those who give more critical judgments about their current situation tend to give higher marks in the evaluation of future expectations.

3.5 Content analysis

In the survey we proposed, some of the respondents were asked not only to think about three memories but also to describe the memory in the questionnaire. We try to group the memories of all the subjects to see what they told us throw the memories.

We put together negative memories with domains and without domains by creating 9 categories: Situations related to lockdown, Emotions, Family and stable affects, Working and study conditions, Economic conditions, Social life, Isolated entertainment, Consequences of Covid-19 disease and Covid-19 news.

In Situations related to lockdown, when we asked to remember happy events, people mentioned memories related to lockdown restrictions. Many respondents have written that they appreciate more the little things of every day such as the beauty of nature or being able to sleep a little more in the morning, while others have written new habits related to lockdown, such as the change in the way they shop. Negative memories, on the other hand, showed a greater focus on less comfortable situations related to the lockdown, such as political news emerging from television.

In the Emotions category we have put all the memories related to the emotions felt during the lockdown. In happy memories, we found emotions related to greater personal growth, positive feelings, emotions such as gratitude and feeling more rested. While in unhappy memories, the most cited emotions are loneliness, uncertainty, isolation and fear.

In Family and stable affects, there are memories related to family members but also to boyfriends, close friends and about the viral disease that has affected some relatives or close friends. We chose not to create an exclusive category for family members because many subjects remembered friends and relatives or girlfriend and relatives in the same memory.

The Working and study conditions category often features memories related to working conditions, losing a job or finding a new one.

Economic conditions is one of the categories in which we have found fewer memories. Economic changes are often cited in recorded memoirs. Some examples are: I have better economic situations or I have had economic losses.

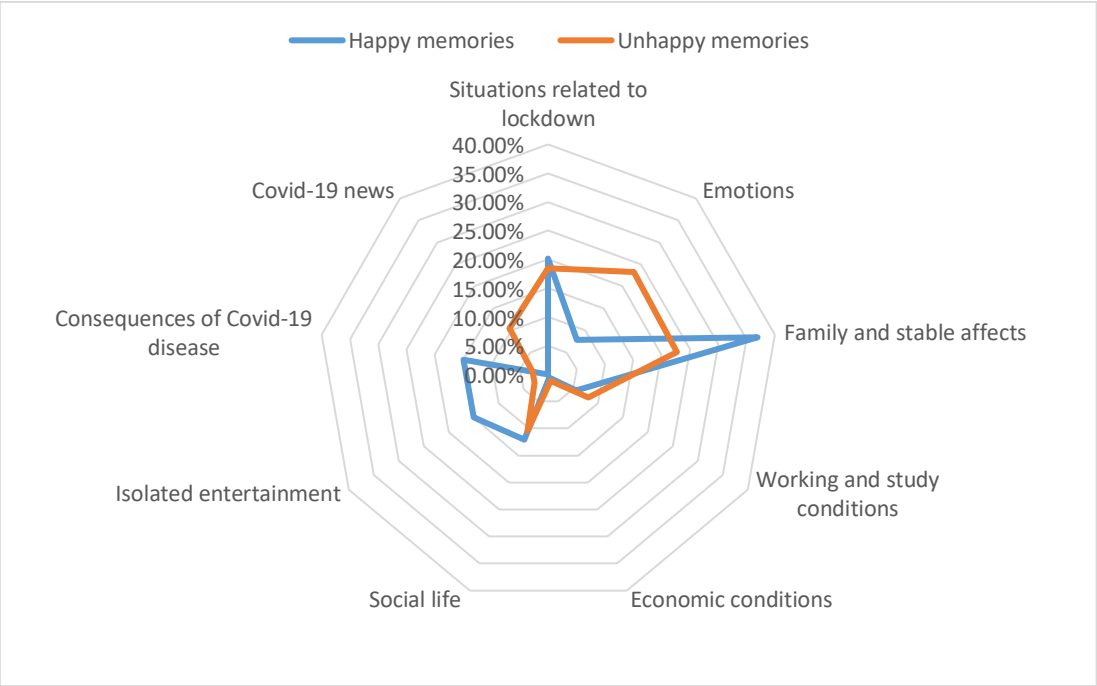
In Social life, when we asked for positive memories, people often talked about activities carried out with roommates or neighbours, activities carried out in groups, video calls, online group games and going out with friends. Negative memories highlighted the lack of relationships and of social life.

Isolated entertainment is the category dedicated to hobbies. In positive memories, many told us about new hobbies such as exercising, reading or cooking while in negative memories, people often expressed discomfort at not being able to practice activities that made them happy before the pandemic.

The Consequences of Covid-19 disease category is dedicated to health. In positive memories, people often wrote that they are happy to be healthy and healings while in unhappy memories many deaths or memories of sick people are mentioned even if they did not have a close relationship.

The last category chosen is Covid-19 news in which we have chosen all the memories related to the news and fears deriving from the viral disease. The memories they wrote often concern the news on the number of deaths in which the city of Bergamo has been mentioned many times, which experienced a particularly complicated moment during the pandemic period.

We have made sure that some categories of memories of content analysis are as similar as possible to those of the six domains of life. For the label Family and stable affects and Social life we were inspired by 3 domains: family, friend and sentimental relationships satisfaction. We have created the Economic conditions label for the domain with the life of economic satisfaction. We thought about the domain regarding satisfaction with the work situation to group the memories in Working and study conditions and for the satisfaction with health domain we created the label Consequences of Covid-19 disease.



Graph 1. Radar graph compares the 9 categories of memories of the respondents.

Graph 1 shows that happy memories have an important peak with regard to relationships with stable family members and loved ones, while respondents wrote few memories related to news on Covid-19, economic conditions and partly related to emotions. Unhappy memories are well distributed except for isolated entertainment memories and the economic conditions in which we have a low number of memories. We can see that people pay particular attention to the emotions felt during the lockdown and news about the virus when we ask to bring back unhappy memories compared to when we ask for happy memories. On the other hand, we have an opposite effect with regard to Isolated entertainment and Consequences of Covid-19 disease which only plays an important role when we give happy memories. Very few people have reported memories of Economic conditions both when we asked for happy memories and when we asked to bring back unhappy memories. The graph shows similar memory percentages between positive and negative memories for three types of memories: Social life, Working and study conditions, and Situations related to lockdown.

We can say that when we ask for happy memories, people focus mainly on memories related to family and stable affections because during the lockdown they were the

people they could interact with the most. Many happy memories are also about health, hobbies, new lockdown habits and social interactions. Unhappy memories focus on family relationships, often negative emotions felt, lack of social life, news related to Covid-19 and working conditions.

For both in happy and unhappy memories, social interactions are very important. When we have unhappy memories, news and emotions take on greater importance, while when the reluctant ones report happy memories they focus more on hobbies, on the gratitude of not being sick and on healings (Consequences of Covid-19 disease).

Conclusions

This thesis aims to assess whether and to what extent recalling happy or unhappy events that occurred in the first lockdown and raising awareness of specific life domains has an impact on self-reported levels of life satisfaction and on expectations of life satisfaction. The life domains chosen to raise awareness are six: income, family, work, friends, romantic relationships and health. We administered a survey experiment in order to investigate the relevance of the effect of frame manipulation and the context effect. Our questionnaire is based on six versions of the questionnaire, which differ in the type of manipulation introduced. In the first and second treatment, we did not ask to remember any event, in the third and fourth we asked to think about 3 happy memories that occurred during the first lockdown, in the last two treatments we asked the subjects to think about 3 unhappy events that occurred during the first lockdown. In the second, fourth and sixth treatments we also asked respondents to report the level of satisfaction for each domain of life.

We document a strong effect when we ask to think about happy memories and we give the domains. The presence of the domains substantially increases the sensitivity level of the responses. Furthermore, with the presence of these, the exposure of the subjects to three positive events linked to the period of the pandemic has brought out the importance of the variables linked to stable emotional relationships and a downsizing of the significance of the career domains, the economic aspect and health. The domain effect often brings back emotions related to lack, fear and sentimental relationships when we ask to remember three unhappy events that occurred in the first lockdown. In this case, we document a strong effect of romantic relationships and a weaker effect for the domains related to friendships and health. When we ask to remember positive or negative events, with the domains, the respondents think about their stable affections or romantic relationships and they forget about health, which becomes less significant.

Furthermore, the values of expectation of life satisfaction are on average higher than those of life satisfaction. In some cases, subjects who make more critical judgments

about their current situation tend to rate higher in the assessment of future expectations.

Finally, the memories of the first lockdown that our sample subjects reported showed that social interactions are very important. In particular, when we ask to remember three negative events, the news on the pandemic and the emotions felt are more important, while if the subjects remember three positive events, the most cited memories concern hobbies and the gratitude of not being sick or being healed.

The contribution of this work to the literature suggests in the first place that the manipulation of the frame, by asking to think about three events, plays an important role in determining the answers to subsequent questions also with regard to expectations about life satisfaction. Secondly, increasing awareness by generating a context effect gives individuals more objective points of reference and this produces more precise and reliable estimates of satisfaction with sight and their expectations.

Appendix

A. Questionnaire manipulations in the survey experiment

As follows, we report the questions used in the six treatments to elicit satisfaction with life, manipulative frame and the six specific domains.

Treatment 1 - No reference to the life domains, no memories (T1)

Covid-19 has had an impact on our life. We ask you to answer the following questions.

How satisfied are you with your life in general? Answer using a scale ranging from 1 = "Very dissatisfied" to 10 = "Very satisfied".

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

We ask you to report what your expectations are about your **satisfaction with life in 12 months.**

In 12 months, how satisfied will you be with your life in general? Answer using a scale ranging from 1 = "Very dissatisfied" to 10 = "Very satisfied".

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

Treatment 2 - Reference to the life domains, no memories (T2)

Covid-19 has had an impact on our life. We ask you to answer the following questions.

Research studies have shown that family, friend and sentimental relationships, education or job situation, economic and health conditions represent important determinants of life satisfaction.

We ask **how much you agree with the following statements.** Answer using a scale ranging from 1 = "Strongly disagree" to 10 = "Strongly agree".

I am satisfied with my economic conditions and my annual income.

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

I am satisfied with my family relationship.

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

I am satisfied with my job (or my student career - if still student).

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

I am satisfied with my friend relationships.

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

I am satisfied with my sentimental relationships.

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

I am satisfied with my health conditions.

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

[Second screen shot] How satisfied are you with your life in general?

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

[Break page]

Covid-19 has had an impact on our life. We ask you to answer the following questions.

How satisfied are you with your life in general? Answer using a scale ranging from 1 = "Very dissatisfied" to 10 = "Very satisfied".

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

We ask you to report what your expectations are about your **satisfaction with life in 12 months.**

In 12 months, how satisfied will you be with your life in general? Answer using a scale ranging from 1 = "Very dissatisfied" to 10 = "Very satisfied".

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

Treatment 3 – No reference to the life domains, positive memories (T3)

Covid-19 has had an impact on our life. We ask you to answer the following questions.

Looking back on last year's **lockdown periods**, we ask you to bring back **3 happy memories.**

Happy memory 1 _____

Happy memory 2 _____

Happy memory 3 _____

[Break page]

Covid-19 has had an impact on our life. We ask you to answer the following questions.

How satisfied are you with your life in general? Answer using a scale ranging from 1 = "Very dissatisfied" to 10 = "Very satisfied".

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

We ask you to report what your expectations are about your **satisfaction with life in 12 months.**

In 12 months, how satisfied will you be with your life in general? Answer using a scale ranging from 1 = "Very dissatisfied" to 10 = "Very satisfied".

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

Treatment 4 – Reference to the life domains, positive memories (T4)

Covid-19 has had an impact on our life. We ask you to answer the following questions.

Looking back on last year's **lockdown periods**, we ask you to bring back **3 happy memories.**

Happy memory 1

Happy memory 2

Happy memory 3

[Break page]

Covid-19 has had an impact on our life. We ask you to answer the following questions.

Research studies have shown that family, friend and sentimental relationships, education or job situation, economic and health conditions represent important determinants of life satisfaction.

We ask **how much you agree with the following statements.** Answer using a scale ranging from 1 = "Strongly disagree" to 10 = "Strongly agree".

I am satisfied with my economic conditions and my annual income.

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

I am satisfied with my family relationship.

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

I am satisfied with my job (or my student career - if still student).

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

I am satisfied with my friend relationships.

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

I am satisfied with my sentimental relationships.

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

I am satisfied with my health conditions.

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

[Second screen shot] How satisfied are you with your life in general?

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

[Break page]

Covid-19 has had an impact on our life. We ask you to answer the following questions.

How satisfied are you with your life in general? Answer using a scale ranging from 1 = "Very dissatisfied" to 10 = "Very satisfied".

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

We ask you to report what your expectations are about your **satisfaction with life in 12 months.**

In 12 months, how satisfied will you be with your life in general? Answer using a scale ranging from 1 = "Very dissatisfied" to 10 = "Very satisfied".

(Very dissatisfied) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | (Very satisfied)

Treatment 5 – No reference to the life domains, negative memories (T5)

Covid-19 has had an impact on our life. We ask you to answer the following questions.

Looking back on last year's **lockdown periods**, we ask you to bring back **3 unhappy memories.**

Unhappy memory 1

Unhappy memory 2

Unhappy memory 3

[Break page]

Covid-19 has had an impact on our life. We ask you to answer the following questions.

How satisfied are you with your life in general? Answer using a scale ranging from 1 = "Very dissatisfied" to 10 = "Very satisfied".

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

We ask you to report what your expectations are about your **satisfaction with life in 12 months.**

In 12 months, how satisfied will you be with your life in general? Answer using a scale ranging from 1 = "Very dissatisfied" to 10 = "Very satisfied".

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

Treatment 6 – Reference to the life domains, negative memories (T6)

Covid-19 has had an impact on our life. We ask you to answer the following questions.

Looking back on last year's **lockdown periods**, we ask you to bring back **3 unhappy memories.**

Unhappy memory 1

Unhappy memory 2

Unhappy memory 3

[Break page]

Covid-19 has had an impact on our life. We ask you to answer the following questions.

Research studies have shown that family, friend and sentimental relationships, education or job situation, economic and health conditions represent important determinants of life satisfaction.

We ask **how much you agree with the following statements.** Answer using a scale ranging from 1 = "Strongly disagree" to 10 = "Strongly agree".

I am satisfied with my economic conditions and my annual income.

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

I am satisfied with my family relationship.

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

I am satisfied with my job (or my student career - if still student).

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

I am satisfied with my friend relationships.

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

I am satisfied with my sentimental relationships.

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

I am satisfied with my health conditions.

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

[Second screen shot] How satisfied are you with your life in general?

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

[Break page]

Covid-19 has had an impact on our life. We ask you to answer the following questions.

How satisfied are you with your life in general? Answer using a scale ranging from 1 = "Very dissatisfied" to 10 = "Very satisfied".

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

We ask you to report what your expectations are about your **satisfaction with life in 12 months.**

In 12 months, how satisfied will you be with your life in general? Answer using a scale ranging from 1 = "Very dissatisfied" to 10 = "Very satisfied".

(Very dissatisfied)	1	2	3	4	5	6	7	8	9	10	(Very satisfied)

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