



*Rushmore
University*

Ph.D. Thesis

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Thinking Processes that create unwarranted stress and a method to change this.

A qualitative and quantitative study of people who either have experienced stress, are experiencing stress, or are being treated for stress.

Supervisor: Prof. Rakesh Sondhi

Date: August 24. 2020

Executive summary

A. Background:

Stress is expanding globally. Although we have attempted many methods of treatment, none of them have solved the problem in a way that we desire.

B. Hypotheses:

The research presents 3 hypotheses:

- 1. Stress is caused by a defined process of thinking that is driven by specific metacognitions, specifically a lack of control of thoughts, and a conviction of the necessity for these uncontrollable thoughts.**

Stress is caused by a very specific type of thinking process that can be identified by two elements:

- a. Thinking about the future - imaginary situations that have not yet occurred.
- b. These imaginary situations do not include a solution.

- 2. Negative thoughts about the future do not include a solution to the imaginary situation.**

The characteristics of negative thoughts and concerns for future situations are:

- a. The tendency to be fantasies and horror scenarios.
- b. A simultaneous absence of a solution to the scenario.
- c. The individual's experience of fear and unease created by the feeling of inevitability, powerlessness, and loss of control. These are natural reactions from human origin. They represent part of our preparedness and are attached to the most important and strongest human operation; **self-preservation**.

- 3. Thought processes that create stress can be changed internally by challenging these metacognitions, from an external source, regarding control of thinking and the necessity of having these thoughts.**

C. Method and sampling:

3 studies were conducted during this research:

1. 476 case notes from the coach of clients who have been in stress treatment have been analyzed.
2. 2,313 respondents from all over the world have completed an online questionnaire, comprising of 8 questions, in which they answer how much stress they have experienced, what type of thinking they have when experiencing stress, and if they think it is personally beneficial to worry.
3. 322 clients that have been through MINDstrain-coaching, working exclusively with their thinking processes, and their stress perception and capability to handle their thoughts, have registered the results in an app the MINDstrain-coach uses.

D. Analysis:

1. 418/476 clients reported that they worry when they feel stressed. 58/476 answered that when experiencing stress, their thoughts were primarily towards the future and at the same time negative. This is what defines a worry.
2. 80% of 2,313 answered that they had negative thoughts about the future when experiencing stress. 47% believed that it was personally beneficial to worry. 82% want to stop worrying, but do not know how to do it.
3. 315/322 clients reported feeling stressed below 3 on a scale from 0 – 10 within 5 x 1-hour sessions. 4/322 needed 6 x 1-hour sessions; 3/322 needed 7 x 1-hour sessions.

E. Conclusions:

More than 86% of the total respondents in this study have the thinking process that defines worrying in general, and convictions that it is either beneficial for them to worrying and/or that they cannot control their own thoughts. Therefore, they keep worrying.

Working with thinking processes is highly efficient, since the specific thinking process is generic and exactly the same regardless of what the topic of the worry is.

The specific metacognitions that cause worry to thrive is a “positive metacognition” that tells us that “we have to worry – it is necessary for us – it is beneficial for us”, and a “negative metacognition” where we are convinced that we cannot stop our worries, and sometimes our own thoughts can be harmful or dangerous to us.

By working with the MINDstrain method to change the thinking process and the metacognitions, 98% of 322 respondents in the study were able to reduce their stress experience remarkably according to the PSS within 5 x 1-hour sessions.



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Stig Sølvhøj

Thesis

1. Introduction

In 2012 I started an education in psychotherapy and part of the training was based on Metacognitive Therapy.

When I became aware of a study that the University of Wisconsin had conducted, which had been going on for eight years (1998 – 2006), comprising of 30,000 American participants ranging from 18 to 65 years, published by Health Psychol. (2012 September; 31 (5): 677-684. doi: 10.1037 / a0026743), it became clear to me that it would be interesting to explore whether there was a link between all the clients I had had since 1995, and what the study documented.

My research of all of my previous clients proved that there was a clearly defined thinking process present within everybody experiencing unwarranted stress.

Regarding stress, I have worked with metacognitive theories and methods, which are basically all about how we become more aware of what we think about our thoughts.

Stress is a naturally occurring condition, both physically and mentally, which enables us to overcome a potential challenge. I define *unwarranted* stress as a state that is either created in the imagination - the individual's perception of a not yet occurred situation, but experienced as real, thus eliciting a physical and psychological response - or that the individual imagines that the existing situation is worse than what it factually is. This unwarranted stress is not appropriate or beneficial.

Just having our cognitive attention on situations that are future-oriented, and not containing a solution or opportunity to get out of this horror scenario, a sense of powerlessness, helplessness, and loss of control is created, which in itself could be anxiety-provoking and stressful.

I am the founder and co-owner of the company MINDstrain where we exclusively focus on preventing and treating stress (www.mindstrain.com). Specifically, I wanted to conduct a study of the characteristics that are consistent in the way people are experiencing unwarranted stress, specifically regarding their thinking. I strongly have the belief that stress is created by the very specific thought process that can be defined as worry.

To my knowledge, there has not been a clear definition of what a worry is, except that it is thoughts concerning something that is regarded as inevitable and has not happened yet. I have found in my research that when worry takes place partnered by the absence of a solution to the future scenario that a person is imagining, a worst case scenario is formed.

This ultimate worst case scenario creates a natural freight that can lead to tension and anxiety because the person feels stuck, without the ability to act on it. An extension of this will create a sense of loss of control (powerlessness), and imagining that this will happen and that there is no included solution, will reinforce that very anxiety and stress.

2. Background

2.1 Stress globally

More and more people are experiencing stress, and stress has become a global epidemic. WHO estimates that stress will globally be the biggest cause of sick leave in 2020; <https://www.who.int/whr/previous/en/>.

During the last 30-40 years, stress has increased rapidly all over the globe, and despite all the attempts to solve the problem, we have still not succeeded.

This purpose of this research is to investigate if there is a specific type of thoughts present when individuals are experiencing unwarranted stress, and if this type of thoughts is created by a clearly defined process within the individual. Furthermore, given this is correct, the research explores whether it is possible to change these thinking processes with a specific method pointed towards the metacognitions that keep that thinking process running.

Based on the time-thought perspective, the type of thinking that creates stress is always oriented towards the future. Humans cannot experience stress related to thinking about what has already happened, because the result of that particular situation is known. These thoughts of the future – things that have not happened yet, and we fear will happen to us without any chance to avoid it – create anxiety and stress.

This research only focuses on thinking processes that create stress i.e. thinking negatively about the future without solutions to the situation.

2.2 Background

Stress has evolved to be a global problem. According to Forbes and Gallup World Poll 2018, the number of people who experience stress has grown radically.

The global stress level shows that 39% of the world population experience stress daily with rates on the scale from 1 -10.

Gallup conducted a study in 2018 with a total of more than 151,000 participants from 140

countries. The part regarding stress included interviews with 1,000 adults. The countries in which the population is experiencing the greatest stress is listed in the following table:

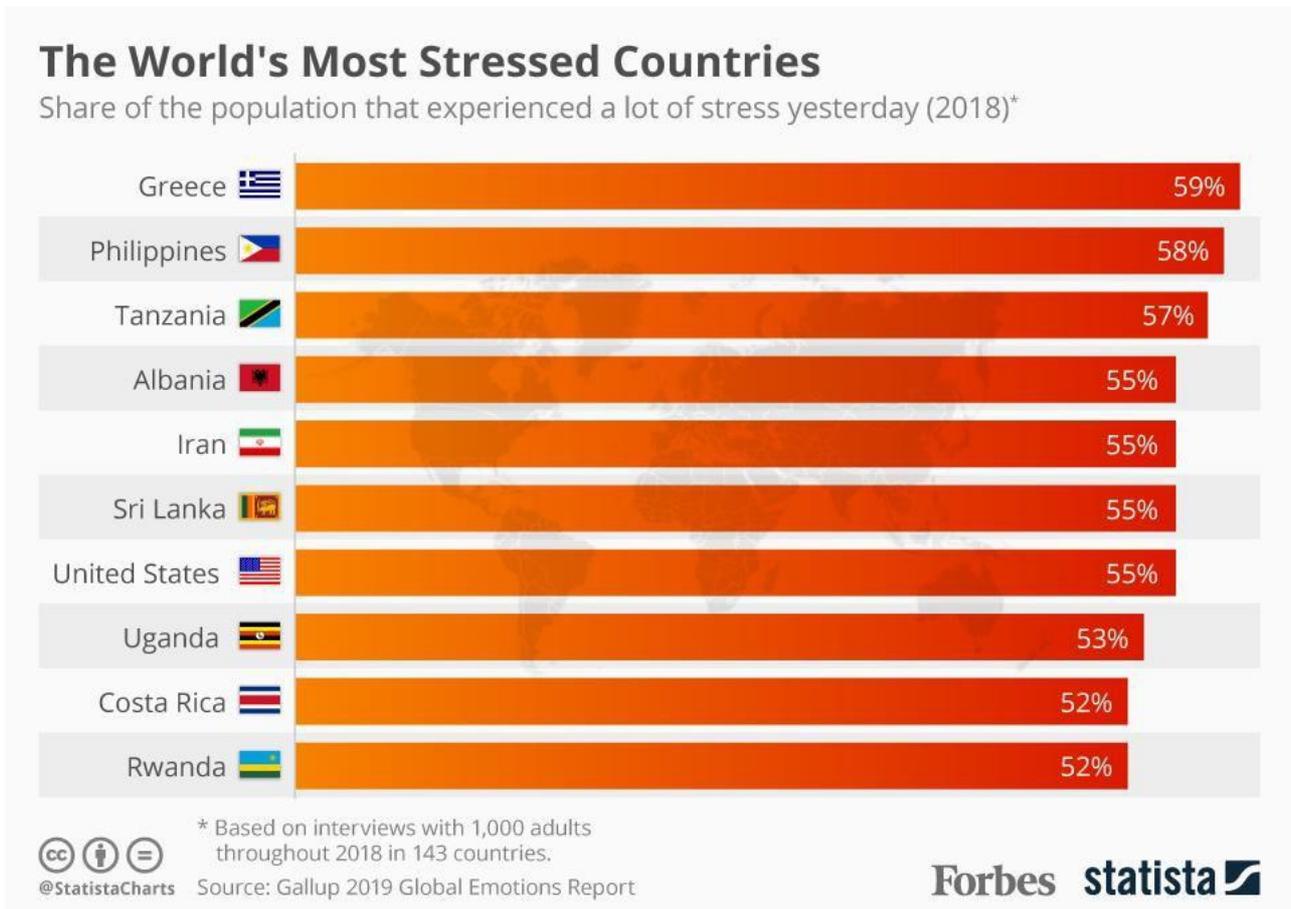


Table 1: World's most stressed countries; Gallup World Poll (2018).

Gallup's entire report is available here:

https://www.gallup.com/analytics/248906/gallup-global-emotions-report-2019.aspx?utm_source=link_news9&utm_campaign=item_249098&utm_medium=copy

A large number of facts show that the global growth in just stress has sharply escalated over the past 30-40 years.

2.3 Why is stress critical in modern life?

People that suffer from stress very often have a lack of quality in their life. They feel anxious, depressed, and incapable of fulfilling all the demands that modern society requires from them. In some organizations, managers report that when an employee begins to feel

stressed, they have a significant drop in performance, and they start to change their behavior towards their colleagues, such as being short tempered, forgetting to have lunchbreaks etc. Modern society is spending tremendous amounts of money on psychologists, hospitals, and social welfare for people that cannot handle the pressure, despite many companies making a huge effort to try to prevent stress from escalating within their company.

2.3.1 Rapid increase in growth in stress

The following facts demonstrates how stress is growing and having a greater impact on society:

- The results from the survey, Stress in Americans show that adults continue to report high levels of stress and many report that their stress has increased over the past year - *the American Psychological Association*.
- 75% of adults reported experiencing moderate to high levels of stress in the past month and nearly half reported their stress has increased in the past year - *the American Psychological Association*.
- Stress is a top health concern for US teens between 9th and 12th grade. Psychologists say that if they do not learn healthy ways to manage their stress now, it could have serious long-term health implications - *the American Psychological Association*.
- 80% of workers feel stress on the job and nearly half say they need help in learning how to manage stress. And 42% say their co-workers need similar help - *American Institute of Stress*.
- Stress levels in the workplace are rising with 6 in 10 workers in major global economies experiencing increased workplace stress, with China (86%) having the highest rise in workplace stress - *The Regus Group*
- Alarmingly, 91% of Australian adults experience stress in at least one important area of their lives. Almost 50% feel very stressed about one part of their life - *Lifeline Australia*.
- Australian workers are absent for an average of 3.2 working days each year due to stress. This workplace stress costs the Australian economy approximately \$14.2 billion - *Medibank*
- An estimated 442,000 individuals in Britain, who worked in 2007-2008 believed they were experiencing work-related stress at a level that was making them ill - *Labor Force Survey*.
- Approximately 13.7 million working days are lost each year in the UK as a result of work-related illness at a cost of £28.3 billion per year - *National Institute for Health and Clinical Excellence*.

Generally, the efforts we have made in relation to stress have not produced the results we

desired. Therefore, we need to find new ways to understand and handle stress from other perspectives that are different to those previously.

3. Literature review

The structure within this literature review is based upon a journey through the work of several scientists who have studied stress from different perspectives. Since stress, thus far, is not a ICD-10 clinical diagnosis, both the very early research within stress, and the impact stress has on the workplace, along with studies where the negative effects of stress, have had an impact. The positive effects have also been included in this literature review, ending up with a more in depth explanation of metacognitive therapy. Finally, the MINDstrain methodology has been included as it is a tool developed directly to handle stress.

The literature review shown as a workflow chart.

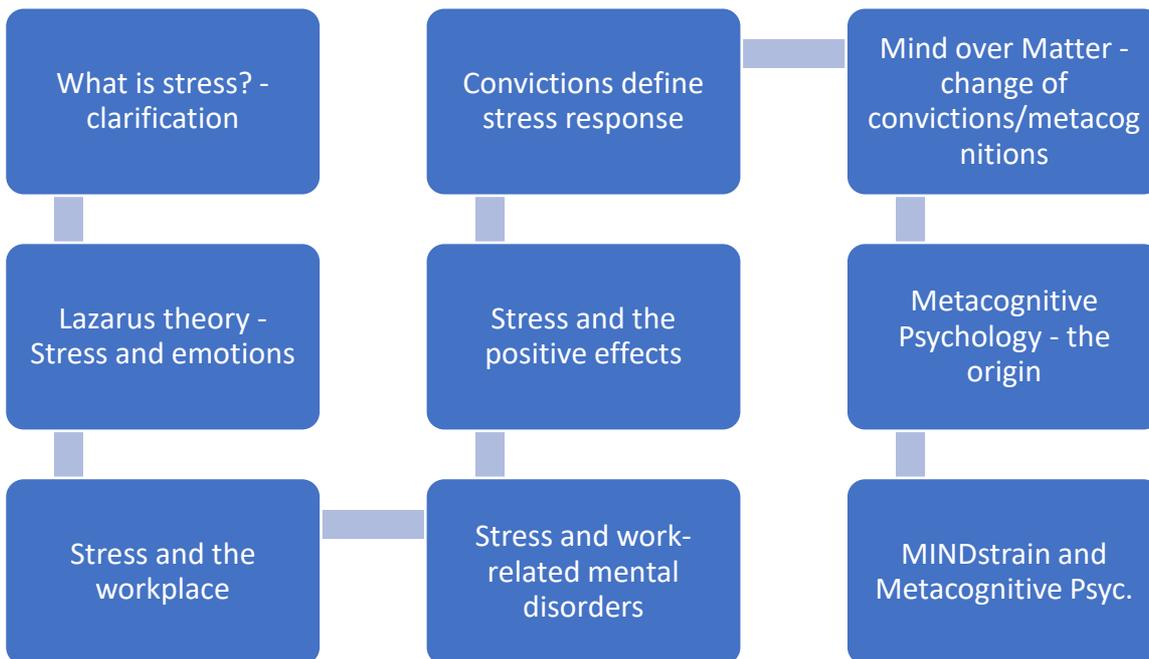


Table 2: Literature review flow chart; Sølvhøj (2020)

3.1 What is stress?

Stress is not a clinical ICD-10 diagnosis, and thus, there is no single accepted way to define stress. The primary reason for this is that our assessment of our own health is of vital importance for our actual health, and therefore, stress is a matter of perception.

The stress can be measured as the release of stress hormones in the blood, among other

things, but it is not part of my research to focus on such measurements. Stress is a natural reaction, and people have always experienced stress. Stress is generally neither negative nor bad. It is the body's way of preparing to perform (Madsen, 2012; Netterstrøm, 2014).

As described in the introduction, it is the intention to reveal the thought processes / metacognitions that can create unwarranted stress, and thus, change this thinking to a more self-supporting thinking process in which stress is not a negative, destructive, and unwarranted state. Therefore, the focus is on the handling of thought processes in the understanding of prevention and treatment.

Metacognitive theory and methods are referred to in the literature in different ways. In the primary research literature it is called the metacognitive therapy, so this is how it is being used in this paper (Fisher & Wells, 2009; Wells, 2011). In metacognitive therapy, an element speaks of Cognitive Attentional Syndrome, which is abbreviated CAS. When you have this syndrome, it is defined best by our thought focus that holds 5-9 simultaneous attention points (Miller, George A.; 1956) that target the same issues.

3.2 Stress and emotions

Stress is a phenomenon that has been studied by a variety of researchers over time.

Richard B. Lazarus, Professor of Psychology at University of California, and one of the pioneers of modern stress research, has tended to focus on stress based on either the amount of external influences or the individual's reaction to these.

The starting point in Lazarus' theory is that stress occurs in the relationship between an affected individual and a stressful situation. In his latest book, Lazarus creates a synthesis between the concepts of stress and emotion (Lazarus, RB (1999): Stress and Emotion: A Synthesis).

He justifies this with the fact that there will always be emotional responses associated with stress, and that it will produce a more nuanced picture of the individual's adjustment - or lack of it - to focus on emotions. He operates with 15 different emotions that are each a measure of a given relationship between the individual and the environment.

Emotion	Core Relational Theme
<i>Anger</i>	A demeaning offense against me and mine
<i>Anxiety</i>	Facing uncertain, existential threat
<i>Fright</i>	An immediate, concrete, and overwhelming physical anger
<i>Guilt</i>	Having transgressed a moral imperative
<i>Shame</i>	Failing to live up to an ego-ideal
<i>Sadness</i>	Having experienced an irrevocable loss
<i>Envy</i>	Wanting what someone else has
<i>Jealousy</i>	Resenting a third party for the loss of, or a threat to, another's affection
<i>Disgust</i>	Taking in or being too close to an indigestible object or (metaphorically speaking) idea
<i>Happiness</i>	Making reasonable progress toward the realization of a goal
<i>Pride</i>	Enhancement of one's ego-identity by taking credit for a valued object or achievement, either one's own or that of someone, or group with whom one identifies
<i>Relief</i>	A distressing goal-incongruent condition that has changed for the better or gone away
<i>Hope</i>	Fearing the worst but wanting better
<i>Love</i>	Desiring or participating in affection, usually, but not necessarily, reciprocated
<i>Compassion</i>	Being moved by another's suffering and wanting to help

Table 3: Emotions and their core relational themes; Lazarus (1991)

With a cognitive-phenomenological approach, Lazarus writes that it is the individual's subjective assessment of the objective conditions that underlie the emotional reaction. The subjective evaluation is influenced by several factors such as the:

- Past experiences
- Memories
- Biases
- Early childhood

of the person and the environment. Lazarus highlights in this context, among other things, the individual's commitment and beliefs. Lazarus, together with S. Folkman, made a transactional model of stress, in which the subjective assessment taken together with the individual's coping is the key concept of stress. (Lazarus, RS & Folkman, S. (1984): Stress, Appraisal and Coping).

Lazarus' & Folkman's model:

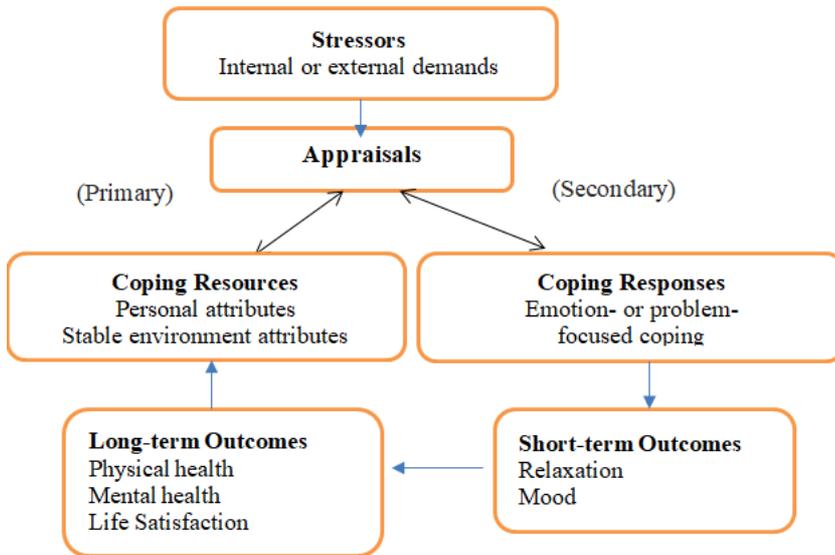


Table 4: Appraisal and Coping; Lazarus & Folkman (YEAR?)

This model forms the basis for an article by B.A. Beresford titled Resources and Strategies: How Parents Cope with the Care of a Disabled Child. Beresford's hypothesis is that the parents of a disabled child may have an increased vulnerability as a result of stress factors associated with daily life. She concludes, however, that the relationship is not clear, since various factors, including available coping resources, determines the influence of these stressors. Lazarus emphasizes that the subjective evaluation can, and will, often take place without the individual being aware of it. This claim is supported by studies of split-brain patients by neuro-psychologist, Joseph LeDoux (LeDoux, J. (1998): The emotional brain. The mysterious underpinnings of emotional life).

Split-brain is an operation in which neurological connections between the two hemispheres, to a greater extent, are destroyed to curb severe epileptic seizures. Information presented to one half of the brain is therefore not available for the other part. Broca's area, the area of the brain that controls speech function is placed in the left hemisphere. The right hemispheres of people in the study were instructed to carry out various forms of responses, including waving or laughing, for reasons unknown to their left hemispheres. However, when the left hemispheres then instructed to provide an explanation for the responses, they knew the cause.

It shows that people do things for certain reasons that are unconscious although they think they are aware. Lazarus also clarifies that there are two kinds of unconscious subjective

judgments: first, the cognitive unconscious and second, partly the unconscious as a result of automated defense mechanisms. Cognitive science, as a result of several studies of how people process information as an unconscious process, has developed well-founded models of mental functions. It shows that a large part of an individual's processing of input is done unconsciously. Unconscious subjective assessments can take place as a result of the individual being unable to focus attention on all of these stimuli. This is supported by the neurological conditions that qualify as 7 ± 2 i.e. the number of simultaneous attention/focus points we can handle (Miller, George A.; 1956).

The Norwegian organizational psychologist, Vegard Thorbjørnsen, interprets Lazarus' theory as follows:

"According to Lazarus and Folkman (1984), the person's ability to manage himself, depends on different factors that they have elected to split into six main categories: health and energy, positive attitude, ability to solve problems, social abilities, social support and materiel resources. Further they believe that the coping is a dynamic process, that does not appear automatically, but as a result of learned strategies people choose to use when they should relate to situations they perceive as stressful. An individual's mental strategy is further more learned early in life, and this will often be used as the standard or preferred coping strategy through their whole life, as long as this does not become challenged. Internal coping strategies can be useful in some situations. First and foremost, a person's preferred coping strategy will be perceived as favorable in general. After all, it may be, that this coping strategy is beneficial during some prerequisites, while other prerequisites will not help them master themselves or counteract the wanted result. A mental strategy that is internalized based on one or more repeated events, may not be as good as if one has to deal with living with a chronic illness or other serious changes in one's health."

In other words, a fundamental prerequisite to handle ourselves optimally within external stressors is that we continuously learn skills to control the thought processes defined here as coping strategies.

3.3 Stress and the workspace

There have been quite a few studies that have examined various causes of stress-affected people leaving work and how they subsequently return back to their jobs. Studies

have had the focus upon the workplace's responsibility, and how to handle – very often from a manager's perspective – the return of the employee (Friis-Andersen, Malene 2015; Ladegaard, Yun 2018).

In 2015, Malene Friis-Andersen completed a Ph.D. research regarding employees that have had sick leave caused by stress, and their return to work. Friis-Andersen writes in her thesis:

"Long-term sickness absence caused by CMD (CMD covers conditions such as depression, anxiety, stress, stress-related disorders, adjustment disorder), is an increasing problem in several countries. Long-term sickness absence is a key risk factor for early retirement. Research shows that only 50% of those who are away from work for more than six months because of mental ill health come back to work, and several studies have identified a strong correlation between depression and disability. Studies also indicate an increased incidence of stress as well as a link between stress and increased risk of sickness absence. CMD-related sick leave and retirement are a substantial economic cost to society and the individual companies."

While this study included 17 respondents, which is enough to be considered evidence-based, it does offer an indication of the extent and impact that stress-related sick leave has on both individuals and society in general.

In 2018, Yun Ladegaard completed a Ph.D. research, also focusing on Work Related Mental Disorders, and concludes:

"Psychosocial hazards are acknowledged by companies as an area of concern. Nearly 80% of managers in a European survey have expressed concern about work-related stress, while nearly 20% consider violence and harassment to be a major concern. However, fewer than 30% of European workplaces have procedures to deal with psychosocial hazards; more than 40% of European managers consider psychosocial hazards to be difficult to manage more than physical hazards in the work environment. Finally, the Second European Survey of Enterprises on New and Emerging Risks (ESENER II) has concluded that managing WRMD and psychosocial-risks remains one of the most challenging issues in occupational health and safety. This survey has identified problems with difficult patients, customers, and pupils, time pressures, and a reluctance to talk openly about issues and psychosocial risks in risk assessments as barriers for addressing psychosocial risks."

There is previously conducted research into the factors that can create stress, which in this context are defined as work-related stress, and which actions should be made by enterprises to prevent and cope with stress-affected employees returning to the labor market.

In many cases, there is a tendency to hold the company and its executives responsible for the stress of the individual employee. To some point the company, as well as the managers, should take responsibility, but it should be with a focus on how to give employees the right skills to handle daily stress, and to make sure that the managers learn what to be aware of in terms of how to identify the signs of stress within the organization and the employees.

This has had a positive effect, namely that a great many companies have increased focus on, among other things, leadership development, and have made many efforts aimed at the psychological work. Several studies reveal that targeted efforts towards the prevention of stress and mental dissatisfaction has had a limited effect, yet overall it has had an effect.

Many managers fail to thrive subsequently because of guilt. They now have an experience of their leadership skills not being good enough, since they still have employees who experience stress during working hours. Often, the content of the dialogue is a question of fault location, rather than the reason behind the stress.

There have been limited preventive targeted actions against the individual, and the treatments that are used to help individuals who experience unwarranted stress have tended to be directed towards the external factors such as those of which the individual has been a relational part. These external factors can occur in many different guises: the amount of duties, immediate superior's behavior and handling of employee dismissal, employment, illness, divorce, changed housing situation, financial problems etc. These stressful factors are obviously external stressors: factors that can cause an unwarranted type of thoughts that can be stressful and anxiety provoking. Even people, who qualify as being robust and resilient, experience unwarranted stress responses.

3.4 Stress and the positive effects

Stress seen in isolation is a condition that is normal for humanity, linked to our self-preservation - our survival instinct.

We can divide this into three factors referred to by Professor Firdaus Dhabhar, University of Stanton:

1. Stressor: an external factor, often without the individual's influence
2. Stress perception: our perception and thinking about the external stressor
3. Biological stress response: activation of our fight or flight response

Our interpretation of the external stressor is therefore crucial to how we respond both physically and mentally. The physical response includes the release of stress hormones such as adrenaline, norepinephrine, cortisol, and oxytocin. This is intended to create a physical state, which is optimal in terms of being able to act in this situation. "Nature gave us a stress response to help us survive - NOT to kill us," states Dhabhar.

Focused research of the beneficial effects of short-term stress is Dhabhar's main focus, and demonstrates that stress hormones in the bloodstream associated with operations, among others, can reduce recovery time quite significantly. In addition, the annexation of body vaccines is significantly better if stress hormones are in the blood stream at the same time. Firdaus Dhabhar has received several awards for this particular research.

3.5 The role of beliefs in stress

Studies conducted by the University of Wisconsin (Abiola Keller, Kristin Litzelman, Lauren E. Wisk, Torsheika Maddox, Erika Rose Cheng, Paul D. Creswell, and Whitney P. Witt), during the period from 1998 to 2006, confirm that our assumptions and beliefs are essential to our stress response.

In this study, researchers followed 30,000 US adults, aged 18 to 65 years over a period of 8 years. Initially, the researchers asked participants how much stress they had experienced in the past year, with a rating on a scale of 0 - 10. Participants were also asked whether they thought that stress was dangerous or harmful to them.

The scale is defined as follows:

0 - 3 = normal stress perception

4 - 6 = moderate stress perception

7 - 10 = severe stress perception

The researchers then followed the 30,000 participants in the period from 1998 to 2006, and the conclusion showed that the participants who had answered that they had experienced stress of 7 or more, and simultaneously thought that the stress was harmful to them, had an increased mortality rate of 43%.

The participants that had the same stress perception, but did not think that the stress was harmful to them, had no increased mortality compared to the rest of the population. In fact, they had the lowest mortality rate of all. The conclusion of the researchers was that it is the individual's beliefs that are essential for the individual's response. It is much more important than stress itself.

3.6 Mind over matter – thought defining responses

Subsequently, Harvard University, Department of Psychology completed a control study with 50 respondents (Jeremy P. Jamieson, Department of Psychology, Harvard University Matthew K. Nock, and Department of Psychology, Harvard University Wendy Berry Mendes).

50 participants aged 21-24 years (N = 50) with a distribution (N = 25 men) and (N = 25 women) participated in this study.

Initially, the scientists exposed all 50 respondents to a psychosocial stress test, and measured their physiological response to this. Afterwards, they randomly selected 25 of the 50 respondents, and taught them to think differently about their bodily reaction. As a continuation of this, they made a second stress test for the total group and once again measured their physiological stress response. This showed that the participants who had learned to think differently about their stress response, no longer responded as before, nor as the other group of 25 participants who now served as the control group. The study is referred to as "Mind Over Matter".

This is extremely interesting since the very thinking processes created by these beliefs are not defined and/or mapped previously. These beliefs are metacognitions and meta-cognitive therapy has shown impressive results for several years, and many articles have been written on the effectiveness of this treatment based on research (Nordahl, Hans & Wells, Adrian).

3.7 Metacognitive Psychology and thinking – the basics

The origin of Metacognitive psychology:

Metacognitions are thoughts about thoughts, feelings, and bodily reactions - in other words, the thoughts on a meta level, hence the concept of METACOGNITIONS.

Metacognitive psychology is a psychological theory that defines some essential elements.

Key elements in Metacognitive Psychology.

Cognitive Attentional Syndrome and Metacognitions (CAS) is explained by the fact that our focus / attention is directed at something specific. We have a neurological condition, previously defined as $7 \pm 2 = 5 - 9$. That is the number of simultaneous points of attention that our brain is neurologically capable of handling. This was initially described by the American psychologist, George A. Miller, from Harvard University in 1956 (Miller, George A. 1956). When all 5 - 9 attention points are focused on the same things, for example, concerns, there is limited mental capacity for other cognitive processes, and thus, we have experience CAS.

Wells and Nordahl have conducted several studies where metacognitive therapy is used as treatment or therapy for ADHD, GAD, OCD, PTSD etc. In terms of research, the metacognitive therapy is currently tested in relation to certain mental disorders. These include depression, generalized anxiety disorder, social anxiety, Obsessive Compulsive Disorder (OCD) and Post-traumatic Stress Disorder (PTSD). Each disorder is related to various destructive thought processes, held by positive and negative metacognitions, all of which results in Cognitive Attentional Syndrome (CAS).

The Danish psychologist, Pia Callesen, is the first to carry out a major study in metacognitive therapy, in which she examines the effectiveness of therapy for people with depression, and she completed a Ph.D. at Manchester University based on this study. Her research shows very positive results (Callesen, 2013; Callesen, 2017).

The studies that have been conducted so far focus on the treatment of various disorders. They do not focus on the preventive element by working with the specific metacognitions, neither do they clarify the time perspective within our thinking. Finally, they do not concentrate specifically on stress, but rather on clinical psychological disorders.

No previously studies have focused exclusively on the thinking processes that create stress. To my knowledge, there are no other studies of this based on the metacognitive psychology. There is no previously conducted research on individual thinking, which can reveal whether there is a defined type of thinking process present when people experience stress. In this research, there is a distinction between content of thinking and thought process. Thought content is defined as what the individual thinks about, and the thought process is the way individuals think about it. For each disorder, there is a very specifically prepared treatment manual (Treatment Plan). Common to these manuals is that they aim to challenge metacognitions and thereby, stop CAS.

Studies of metacognitive therapy show that the therapy has a positive effect (Wells, 2011, Wells & Fisher, 2009; Callesen, 2017; Wells & Nordahl, 2014). Several researchers compare these results with results from research in cognitive therapy, and studies clearly show that the metacognitive approach is the most effective, especially in the long term – the decline effect (Nordahl et al., 2016; Nordahl & Wells, 2017).

3.8 An introduction to metacognitive therapy:

Metacognitive therapy (MCT) is a newer theory within psychological therapy. The therapy is based on a specific theory about the causes of mental disorders in which mental disorders are believed to be characterized by a cognitive attention syndrome (CAS) consisting of worries, speculations and musings, and a fixation of attention on the threats and negative thoughts and feelings. CAS exists when one uses too much or a long time on the negative thought processes. When you have not built up cognitive flexibility, you cannot consciously break these thought processes (Wells, 2011; Callesen, 2017). Furthermore, CAS consists of unwarranted coping strategies that backfire and exacerbate the problems. These unwarranted coping strategies can, for example, be expressed as avoidance behavior.

People avoid certain situations because they can activate negative thoughts and feelings, which they are unable to control and manage. They have a feeling that the thoughts and emotions overwhelm them and that no one is in control of them (Callesen, 2017). When these thoughts and feelings are not stopped, they have a "snowball effect", where they are amplified, and where emotions are experienced as more real and true the longer it goes on (Callesen, 2017). The idea that anxiety can overwhelm someone may itself activate feelings of anxiety, so it can evolve into being afraid of fear. To avoid negative thoughts and feelings is unwarranted because it is symptomatic treatment, and it greatly destroys a positive, constructive, and naturally social life. Everyone has negative thoughts and feelings, and most people can handle these in a way that they do not lead to psychological imbalances (Bonanno, 2009; Wells, 2011; Callesen, 2017).

When the negative thought processes become entrenched, and we give them too much attention, we will develop CAS that affect our well-being negatively, which can cause mental disorders. "For most of us, emotional discomfort is transitory because we learn ways of flexibly dealing with negative ideas (i.e. thoughts and beliefs) that our minds construct."

The metacognitive approach is based on the idea that people become trapped in emotional disturbance because their metacognitions cause a particular pattern of responding to inner experiences that maintain negative emotion and ideas.

"The pattern in question is called the cognitive attentional syndrome (CAS) which consists of worry, rumination, fixated attention, and unhelpful self-regulatory strategies or coping behaviors " (Wells, 2011, p. 58).

"The core principle of Metacognitive Therapy is that psychological disorder is linked to the activation of a particular toxic style of thinking called CAS" (Wells, 2011, p. 102).

3.9 What are Metacognitions?

Metacognitions are thoughts about thinking and are comparable to beliefs that, among other things, define how we process information and handle our own thoughts and feelings. "Metacognitive knowledge; refers to the beliefs and theories that people have about their own thinking" (Wells, 2011).

Our metacognitions run our thought processes and emotional life. Metacognitions are responsible for healthy control and unhealthy control of the mind. Furthermore, it is based on the principle that it is not merely "what" a person thinks but "how" he or she thinks that determines emotions and the control one has of them (Wells, 2011).

I will explain Metacognitions more specifically in section 8.

3.10 Mental strategies and Metacognitions

We all have used, and continue to use, metacognitive strategies to deal with our own thoughts. We use them to control our thought processes with the purpose of regulating ourselves of thought and emotion (Callesen, 2013; Callesen 2017). For the most part, it is a process that runs smoothly. It does not mean that we humans should avoid emotional fluctuations or negative thoughts. It just means that we can mostly handle these fluctuations without causing mental imbalance, without developing mental disorders, and without feeling that we will have to avoid doing things in our lives that are important to us. *"Metacognitive strategies are the responses made to controllers and alternative thinking in the service of emotional and cognitive self-regulation"* (Wells, 2011, p. 86).

3.11 CAS - Cognitive Attentional Syndrome: a key point in MCT

People with CAS often have a feeling that their thoughts and feelings overwhelm them. They experience being overwhelmed and being caught by "the emotions of violence".

Furthermore, people can have a fear of becoming insane due to their own thoughts, or a fear of becoming physically ill due to suffering from mental problems. In addition, natural bodily responses will be interpreted as dangerous. For example, symptoms of impaired memory may be interpreted as a sign of brain disease, or heart palpitations may be interpreted as a sign of heart failure. These hazardous thoughts keep the CAS activated when they activate speculation, worries, and ruminations (Wells, 2011)

When people develop CAS, it is due to specific metacognitions. It is the same metacognitions that keep people stuck in the CAS. These metacognitions that create and maintain CAS are named positive and negative metacognitions (Wells, 2011; Callesen, 2017).

3.12 Positive metacognitions – perceived benefits and utility

The positive metacognitions are thoughts regarding the added value of being in CAS. The beliefs or convictions about the thoughts and feelings they have when they are in CAS are necessary and helpful. These could be beliefs about the need to worry about the future in order to be prepared for the things that can happen, or that we should care about the people we love, otherwise we do not really love them. We can have beliefs that if we care, we are able to predict the future, and thus, prepare ourselves properly. Or that it is necessary to ruminate (brood) on the past, to prevent that difficult thing from happening again.

Ruminations are always past-oriented in the same way as worries are always future-oriented. They are often based on our understanding of what happened, why it happened, how it was possible, and why we did not stop it instead of being inactive within the situation. The hallmark is typically that the answers that we get, we do not trust – there must be more to it than we first assumed – and that it makes no sense to us. That activates the CAS over and over again, and then we are stuck, because we think that it is necessary to find an answer or the right answer – but we never trust it.

The positive metacognitions are not positive for our mental life as they initiate and keep the CAS going if they do not get slowed down and replaced by other ways of thinking (Wells, 2011). We attach them regardlessly with a positive impact, because they are based on a belief in a positive value of necessity and being beneficial. Often, it is an excuse, explanation or justification that we spend time worrying, and that it is actually ok to have this type of thinking.

3.13 Negative metacognitions – lack of control and possible harmfulness

The negative metacognitions consist of two different convictions: 1) a conviction not to be in control of our own thought processes and feelings 2) a conviction that our thoughts and feelings can be harmful and / or dangerous for us (Wells, 2011; Callesen 2013; Callesen 2017). Similar to the positive metacognition, the negative metacognition starts and maintains CAS.

The experience of lack of control will often lead the individual to feel powerless and without influence, which can result in despair. If you still cannot do anything about the situation, it is natural to be passive and paralyzed.

When thoughts of control begin to be dominant, we create a sense of turmoil, tension, and anxiety, which will lead to an experience of stress when our thinking focuses on a worst case scenario and there is no solution included with this situation. This kind of resignation occurs in some people when they have been exposed to stressful events that they experienced not being able to do something about (Seligman, 2014).

A parallel can also be drawn to Seligman's theory of learned optimism. For example, when you are a compulsive optimist, you will avoid extensive self-blame and avoid worrying about the state of mind passing because you have a conviction that it will. In contrast, there are many things to worry about and ponder over when you have a pessimistic view of life. For example, you could worry about the challenges, your own behavior, and if there were things you should have done differently (Seligman, 2006), which can lead to many and endless ruminations and worries. From this perspective, there is a correlation between pessimism and CAS.

Metacognitive therapy focuses on the "puncturing" of the metacognitions, as they start and keep the CAS running. As previously described, CAS is the cause of psychological imbalances and disorders. It is not the content of the CAS, which metacognitive therapy deals with, but rather those processes that keep the unwarranted thoughts in progress (Wells, 2011). Metacognitions can thus be seen as the engines that make the machinery start and run.

3.14 Trigger thoughts – the ones that start the process

Within metacognitive psychology, understanding and working with the concept of trigger thoughts are essential. Trigger thoughts are thoughts that move from our subconscious to our consciousness (Wells, 2011; Callesen, 2017). The word is derived from the trigger on a gun, and graphically illustrates how such thoughts may elicit a response, which is shaped by the meaning or value we give the trigger thought (Callesen, 2017).

If, for example, the trigger thought is given a negative value or meaning, it could result in a negative thought process. If it was given a positive meaning, it may lead to a subsequent positive thought process.

Statistically, people have 60,000 to 90,000 thoughts per day, and only 10% of those

occur in our consciousness (Lund Madsen, Peter; 2012). These conscious thoughts are basically activated by trigger thoughts.

Trigger thoughts are initially neutral and have no particular significance or value. We give, often unconsciously, the trigger thought a particular meaning, and this can be positive and bring us into positive thought spirals and feelings, just as it can be negative and lead us into negative thought spirals and emotions (Wells, 2011; Callesen 2017). Trigger thoughts arise on the basis of associations. It can be a word, a scent, a picture, or the like, which triggers numerous associations (Callesen, 2017).

For example, a scent of vanilla could activate the trigger thought, "grandmother", and lead us back to Grandma's kitchen and homemade strawberry jam. A certain song can activate the trigger thought "high school" and lead us back to the years of our good old youth. These are examples of positive thought spirals that are triggered by positive trigger thoughts.

On the negative side, the word "exam" could lead us back to the time when the mind went blank, when the heart galloped along, and we felt anxiety. Or a song can lead us back to the girlfriend who left us and how we experienced unrequited love. Both of these examples may cause negative thoughts about the past and the future. These negative thoughts can turn into endless analyses of why it ended the way it did, and a variety of self-blame. Furthermore, they can turn into endless "what if thoughts" that prevent us from doing the things in life that we want. For example, ruminations about unrequited love could result in not having the courage to embark upon new love relationships because we worry about how it will turn out. It happens when we end up overthinking and thus, are experiencing CAS.

We have no control over our trigger thoughts. Therefore, we have no control over what thoughts were moving from our unconsciousness to our consciousness. What we are in control of is how much and for how long we engage our trigger thoughts (Wells, 2011; Callesen, 2017), and the meaning we give the individual trigger thought - good or bad. When we give trigger thoughts a negative meaning, and we follow negative trigger thoughts and engage with them for a longer period of time, it affects us negatively. The focus of metacognitive therapy is to register trigger thoughts, not unconsciously assign

them with a negative value, understand the importance of not creating negative trigger thoughts, and practicing not engaging with them (Callesen, 2017 - Sølvhøj, 2017). Many people require training to achieve this awareness, control and ability to choose between trigger thoughts. All people can develop this ability through certain exercises, which in this context means training in the area of response postponement.

3.15 Cognitive vs. metacognitive therapy – same or different?

In both cognitive and metacognitive therapy, it is believed that it is interference in our thinking that creates mental disorders. They disagree, however, about the type of disorder that's creating problems (Nordahl et al., 2017). In regards to psychological problems, cognitive therapy sees it as a content problem and believes that it is the thought content (the specific objects you are thinking upon), which is the problem. Therefore, there is primarily a focus on the content of the thoughts in cognitive therapy, which traditionally is about restructuring mental content (Beck, 2013). For example, the therapist will typically "reality test" the client's thoughts by asking questions like: "What is the evidence for - and what is the evidence against - you not being good enough?" In addition, the therapist will ask questions that inspire the client to replace negative thoughts with positive thoughts for example: "What could you think about it instead?" and "Do you have experiences that disprove your negative thoughts and feelings?". Then you would make a strategy for the client to move forward and stay focused on the positive thoughts and feelings, rather than on the negative ones. You value emphasizing the positive as more real, appropriate, and good. The positive thoughts and emotions are viewed as being more correct, appropriate, and good (Beck, 2013).

The basic assumption of cognitive therapy is that some thoughts can make us mentally ill, and therefore, we must be attentive to think the "right way". To think the "right way" about ourselves and the world is the focus of cognitive therapy. If the client is fearful of social situations, the therapist will challenge the mind and try to reprogram it so the fear disappears as a result. It uses the logic of the cognitive diamond where thoughts, feelings, behavior, and body are linked (Beck, 2013).

In metacognitive therapy, we do not give the content of the thoughts any importance. It attaches the same meaning and value to all thinking. This is because it is regarded as being completely normal to have negative thoughts - about ourselves, others, and the

world.

Everyone has negative thoughts, and for most people, it is not a problem. In metacognitive therapy the theory is that thoughts has no power and therefore, the focus of the therapy is not about learning to think the "right way" (Wells & Nordahl, 2014; Wells, 2011; Callesen, 2017). Metacognitive therapy has a different perspective on the problem for people with mental illness – it is quite different to cognitive therapy. The problem is that some people have difficulty putting their negative thoughts aside and managing their attention elsewhere. It's called cognitive flexibility (Wells & Fisher, 2009; Wells, 2011; Callesen 2017).

In metacognitive therapy, it is irrelevant to work with what you think – the content of the thoughts. Metacognitive therapy is all contrary to the basics of how to think. More specifically, it focuses on helping you to gain control of your thinking, so you can be flexible in terms of choosing what you want to use your attention and thinking on. "Thoughts do not matter but your responses to them does" (Wells, 2011, p. 55). In comparison to cognitive therapy, which involves thinking more or thinking about thinking, metacognitive therapy is about less thinking – not overthinking.

In cognitive therapy, the work is typically from an ABC model (Beck, 2013):

A = Trigger - B = Thoughts - C = Emotional consequences

Example: A = I'm lonely - B = It never changes / Nobody likes me - C = Sadness / Depression

Goals for therapy: Challenge and change your mind about loneliness.

The basic model in metacognitive therapy is "The self-regulatory executive function model" S-REF (Wells, 2011, p. 99), which is named AMC:

A = Trigger - M = Metacognitions and CAS - C = Emotional consequences

Example: A = I'm lonely - B = I must ponder to change it / If I cultivate the feeling, I get

motivation to change it / I cannot control my thoughts / My thoughts make me crazy - C = Sadness / Depression.

Goals for therapy: Challenge the metacognitions and thereby stop CAS.

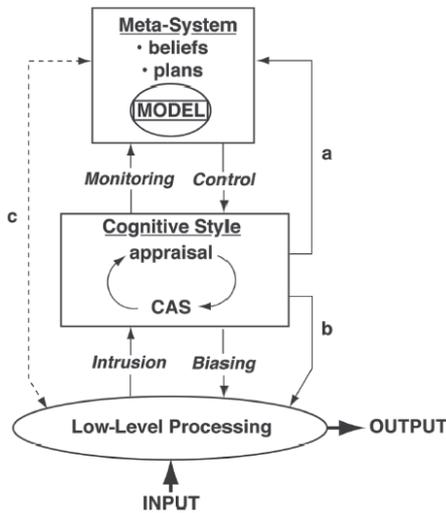


Table 5: The S-REF model; Wells (1996)

3.16 MINDstrain and metacognitive therapy

This section is characterized by a focus on the MINDstrain model, a model that is developed on the basis of metacognitive therapy. Therefore, part of this section is based on reflections and further development of existing theory, and consequently, there are several places in this section in which it is not possible to have references because it is only previously described in the book, “Strain – no more stress” (Sølvhøj, 2017).

As the MINDstrain model and the thoughts about it have not been previously researched, it that can be criticized that the model can be nepotistic. This makes sense because the MINDstrain model is based largely on metacognitive therapy, which is based on research, and the evidence of this study confirms the efficacy exists.

In the development of the MINDstrain method, previous research on metacognitive therapy, particularly the research focused on depression and anxiety, has been the basis of the development. The reason for this is that there are many similarities between stress and depression, as well as stress and anxiety. Research shows that prolonged stress in

some people can lead to depression (Netterstrøm, 2014). Therefore, there are some similar thought processes in humans, suffering respectively from stress and depression, that could cause anxiety.

Furthermore, stress will, in some people, lead to anxiety reactions (Netterstrøm, 2014). It may be due to fear of bodily signals that are natural when we experience stress, but can be perceived as dangerous or harmful to us. Furthermore, some people could react with anxiety when they are in an experienced uncontrollable situation, which relates to the negative metacognition about the experience of lack of control (Callesen, 2017). Stress is often experienced as a state that cannot be controlled. This is naturally combined with the definition of a concern; when the thinking about the future is a worst case scenario and does not include a way out of the situation. People who have experienced severe stress are often afraid to experience it again. In these situations, people develop anxiety for stress, even if they are not experiencing stress in a current situation (Netterstrøm, 2014). Often, the fear of anxiety is greater than even the factual anxiety, and thus, the mode is almost chronic.

3.17 Analysis of literature review – comparisons and differences

3.17.1 Stress, emotions, and daily life

Lazarus has defined the cause of stress to be a result of what happens between external stressors and the perception of the situation. His conclusion is that stress in the individual is always causing different emotions, and that these emotions are a result of the perception of the stressor. He is the only researcher that has combined that amount of feelings with stress.

Lazarus neither includes the type of thinking that the individual has when experiencing stress nor concludes if the external stressor is a real threat or if the response is the same if it is an imaginary situation.

Friis-Andersen and Ladegaard has concluded that stress is a major reason for sick leave, and the success for the individual's return to the workplace depends on how well prepared the manager and the workplace is to handle this individual. The focus is exclusively on the external stressors and does not clarify the individual's perception of the stressors or the emotions that Lazarus focuses on. The cause of and reason for stress is attributed to external stressors only.

3.17.2 The thoughts' impact on stress

The results from University of Wisconsin proved, for the first time, that the way we think is important for the perception of stress. The study and researchers did not clarify which specific convictions are present when experiencing stress, except that some people believed that stress was harmful to their health. Convictions are metacognitions although they are not presented as that in the study.

Harvard University concluded that if participants in the study changed the way they were thinking about their stress response, both the mental and physical response changed. This conclusion supports both Lazarus' research - that stress is caused in the collaboration between the external stressors - and the individual's perception of these stressors. This study also supports the study from Wisconsin - that how we think about stress matters. The study did not clarify which metacognitions have to be changed in order to change the thinking.

Could stress even be healthy or helpful for humans?

Firdaus Dhabhar has proven that short-term stress is not harmful, but is in fact very helpful for us. Individuals that have e.g. adrenalin, cortisol, and oxytocin in the bloodstream, have a much faster recovery after surgery and vaccinations. Dhabhar defines stress as a result of the individual's perception of the external stressors, and he is on the same track as Lazarus so far, although Dhabhar doesn't focus on the emotions when experiencing stress. The type of thinking causing this perception is not a part of Dhabhar's research and conclusions.

3.17.3 The metacognitive perspective

Vygotski was the first to discover thinking processes, but did not describe them as metacognitions. Piaget also worked with this "new concept" although it was not completely specified what metacognitions truly was.

Adrian Wells was the first to name this phenomenon about thoughts as "metacognitions". Wells, and later on, Nordahl, have proven that our conscious thinking is driven by these metacognitions, and to some point have divided them into 2 types of categories: positive and negative metacognitions. The research primarily done by Nordahl has shown that various personality disorders are rooted in metacognitions. Wells and Nordahl have taken the stress research to the next level by identifying the metacognitions, but they have not described the time-thought perspective and the specific metacognitions present when experiencing unwarranted stress.

The metacognitive therapy and the MINDstrain method may be criticized from many angles, so I will limit my focus by highlighting one criticism of the metacognitive therapy, and three criticisms of the MINDstrain method.

3.17.4 The MINDstrain approach

The criticism I will point out, compared to the meta-cognitive therapy, is that it is a very rational and logical approach to treatment. We believe that by focusing on the thought processes, we can cure many pathologies and imbalances. It does not focus on bodily processes and the physical memory.

My first criticism of the MINDstrain method is that it breaks away from many common ways

of looking at stress. In other words, the approach could be viewed as a form of disturbance or destabilization of how many have worked with stress the past several years. Stress is traditionally seen as a condition that occurs when the requirements and resources do not match. This could be caused by too many tasks in a short period of time or too much complexity in relation to skills. With this approach, it is important that stress is understood as a unique situation, since the requirements and resources will always differ from situation to situation.

The MINDstrain method offers a “one size fits all” approach where we start from that stress caused by too much time in the CAS. The focus is to limit the time in the CAS by using certain exercises and tools, after having mapped the time perspective within the thoughts, meaning that it is important to discover if thought content deals with the past or future.

My second criticism is that our perspective on stress is very simple. We say that stress is always due to too many concerns for a long period of time. Stress is not due to anything else than worries. Of course, we can worry about different things. It can be tasks, deadlines, a bad boss, children, our spouse, health etc., but it is not relevant. What is relevant is to control the thought processes that lead to too many concerns or worries, whatever the concern revolves around.

This simple approach to stress is different from what we previously knew, and I’m aware that it can be criticized. All this being said, I, as Richard Lazarus defined, can split it between external stressors and the individual’s perception of them. In this theory, Lazarus describes it thus as the relationship itself that stress is created, which does not take into account the individual’s perception of the situation, and what types of thinking that this is about.

The third criticism is that we split up thoughts into past thoughts and future scenarios, and assume that it is possible to assess whether the majority of the mind turns in one direction or another. I diagnose stress based on the direction of thoughts, and also say that concerns exclusively belong with future thoughts. This clinical and conscious differentiated approach to ideas can be criticized, particularly from the knowledge that most of our thoughts are unconscious. However, my research and study shows that when asked, respondents are able to distinguish between these time perspectives within our thoughts.

Thought-time perspective:

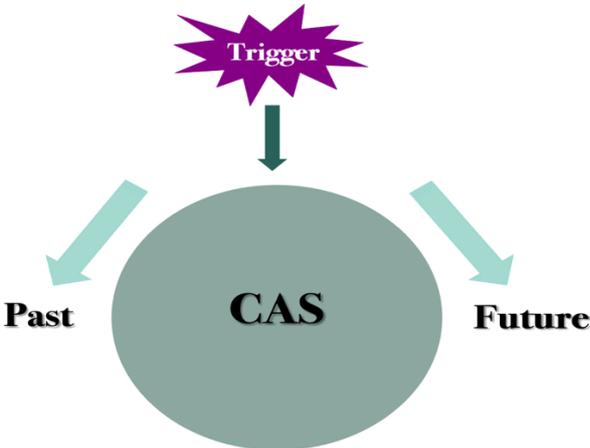


Table 6: Thought-time perspective; Sølvhøj (2014).

3.18 Literature review summary

Topic	Literature title	Key points	Comparisons / differences
Stress and emotions	Emotions and core relational themes; Lazarus, R.: (1960)	Emotional response always causes stress	Thinking creates emotions
Returning to the workplace after stress	Sick leave with common mental disorders; Andersen, M.F.: (2015)	Link between stress and sick leave	Stress is caused by the environment
Stress related to work	Work-related mental disorders; Ladegaard, Yun: (2018)	Psychosocial hazards is an area of concern	Stress is an increased problem and a major challenge
Positive effects of stress	The short-term stress response; Dhabhar, F.: (2012)	Stress hormones help recovery after surgery and vaccinations	Convictions of stress can be changed for the better
Harmful effects of stress	Does the perception that stress effects health matter; Keller, A. <i>et.al.</i> : (2012)	Convictions are more harmful than stress itself	Convictions of harmfulness are more important than stress itself
Changing thinking is changing stress response	Mind over Matter; Jamieson, J.P. <i>et al.</i> : (2012)	Response is created by our thinking	By changing your thoughts you change the bodily response
Revealing Metacognitive therapy	Metacognitive Therapy; Wells, A.: (1996)	Thoughts are driven by thoughts of thoughts	Clarifying various metacognitions
Cognitive vs Metacognitive Therapy	Cognitive behavioral therapy – basics and perspectives; Wells, A.: (1996)	Content vs process in thoughts	Separate levels of thoughts
MINDstrain method	Strain – no more stress; Solvhoj, S.: (2017)	Time-Thought perspective	Stress is created by a specific process

Table 7: Literature review summary; Sølvhøj (2020)

4. Hypotheses

4.1 Purpose of the study

This study investigates the thinking processes that are present when a human is experiencing unwarranted stress, and whether it is possible to bring individuals out of this type of thinking effectively and judiciously.

This study focuses on three different hypotheses simultaneously, as it is natural to work with a clarification of whether there is a uniquely defined thinking process present during the experience of unwarranted stress, and given it can be proven, to then investigate an effective method that can correct this thinking process.

The field of research can therefore be prepared in 3 individually favored hypotheses that are a natural extension of each other.

4.2 Hypotheses the study investigates

This research has provided 3 hypotheses:

4.2.1 Stress is caused by a defined process of thinking that is driven by specific metacognitions, specifically a lack of control of thoughts, and a conviction of the necessity for these uncontrollable thoughts.

Stress is caused by a very specific type of thinking process that can be identified by two elements:

- c. Thinking about the future - imaginary situations that have not yet occurred.
- d. These imaginary situations do not include a solution.

The human brain cannot always distinguish between fiction and reality, and because it believes that the imaginary situation is real, we respond physically and mentally as if it happened in reality.

4.2.2 Negative thoughts about the future do not include a solution to the imaginary situation.

The characteristics of negative thoughts and concerns for future situations are:

- a. The tendency to be fantasies and horror scenarios.

- b. A simultaneous absence of a solution to the scenario.
- c. The individual's experience of fear and unease created by the feeling of inevitability, powerlessness, and loss of control. These are natural reactions from human origin. They represent part of our preparedness and are attached to the most important and strongest human operation; **self-preservation**.

4.2.3 Thought processes that create stress can be changed internally by challenging these metacognitions, from an external source, regarding control of thinking and the necessity of having these thoughts.

Thoughts that create concerns and worries can be restructured by learning to shift the attention towards a focus to a defined self-supporting thinking process. Very often, there is no internal awareness of the metacognitions, and it then demands an external source to create that focus and awareness of the convictions. That external source can be a therapist or a coach – or even someone else – who can create the reflection needed to be aware of either the believed benefits of the concerns or that it is actually possible to stop thinking like that.

When realizing that there are no benefits of worrying, and the view that positive metacognition is responsible for that type of thinking is challenged, it is possible to change these convictions. Consequently, it is possible for a human being to use another more self-supportive thinking process. This is a self-supporting thinking type, which indicates that there is a solution and/or a way out of the situation, whereas concerns do not create momentum but exclusively maintain a sense of loss of control.

Solution-focused thinking are based on the following elements:

- The factual situation
 - a. Conditions of the situation
 - b. Problems in the situation
- Options in the situation – including the involvement of past experiences / learning points
- Specific action – what I can do.

Since the thinking process “concerns” may not be present simultaneously with solution-focused thinking, it will itself be self-supporting, and help the individual to no longer feel the experience of control and powerlessness, which will give the feeling of relief and stress responses will drop.

5. Methods used in the studies:

Due to the three hypotheses, it was decided to complete 3 different studies:

- A. Investigate common thought processes in clients experiencing stress.
- B. Clarifying thought processes.
- C. Efficiency of changing thoughts.

5.1 Study 1:

Investigate common thought processes in clients experiencing stress.

Aims and objectives:

Level of negative thoughts of the future expressed by clients.

Research method/data collection:

Qualitative method reviewing therapist notes involving one-to-one interviews lasting for 60 minutes. The composition of respondents has not been in my full control.

The interviews took place in the therapist's clinic from January 2013 to December 2018.

Records of clients, where the clients have been treated by the undersigned and 29 external MINDstrain coaches geographically located across Denmark, have been carefully reviewed with the proper discretion and with respect for GDPR regulations.

The therapist made notes from these sessions where the client had mentioned that they worried. The method for this study is notes from the therapist working with their clients.

Questions asked by the therapist are:

- (a) OPEN QUESTION: How much stress have you experienced on average during the last week on a scale from 0 – 10?

Purpose: To identify the level of experienced stress and get a common understanding of the stress perception.

- (b) OPEN QUESTION: When experiencing stress, are your thoughts about the past, present, or future?

Purpose: To clarify if the thought-time perspective regarding stress is caused by negative thoughts about the future (hypothesis 1).

- (c) CLOSED QUESTION: Do your thoughts include solutions or possibilities to the situation you are thinking about?

Purpose: To uncover if the way of thinking is only worst-case scenarios and they do not provide solutions or possibilities (hypothesis 2).

- (d) CLOSED QUESTION: Do you think it is beneficial or necessary to think the way you do?

Purpose: To uncover the positive metacognition that explains that it is important to have these thoughts (hypothesis 1).

- (e) CLOSED QUESTION: Are you capable of stopping these thoughts if you want to?

Purpose: To uncover the negative metacognition that explains that these thoughts are uncontrollable (hypothesis 1).

Sampling method/profile:

Size of sampling: N =476 clients were reviewed (N=men 190); (N=women 286).

Age distribution:

AGE	19-29	30-39	40-49	50-57	Total
MEN	27	37	76	50	190
WOMEN	48	73	101	64	286

Table 8: Age distribution study 1; Sølvhøj (2020)

Location:

Clients are all located in Denmark.

Advantages and disadvantages of method:

The advantages of collecting data from questionnaires are that it is possible to get comparable answers from multiple questions from many people, and get measurements from these.

The disadvantages of collecting data from questionnaires are that it is difficult to get further information, and it is difficult to know if people answer honestly.

Previous studies have revealed that it is the perception of the external stressor that defines the response, much more than the external stressor itself – both Lazarus and Dhabhar have clearly demonstrated that. Studies have also shown that worries will, to some extent, be the reason for stress and anxiety – but the definition that a worry never includes a solution to the situation has never been included in the research. Neither has no one, to my knowledge, previously worked with the time-thought perspective, or defined the specific metacognitions that are present when experiencing stress.

Summary of method:

This quantitative method has provided a volume of clients who have all been in treatment for stress. It has provided data from different therapists asking the same questions to reveal the thought-time perspective, and clarified the active metacognitions – both the positive and the negative metacognition. The lack of solution to the situation has also been investigated.

This relates to hypotheses 1 and 2.

5.2 Study 2:**5.2.1 Clarifying thinking in general public.****Aims and objectives:**

- To clarify if the time-thought perspective was obvious to respondents.
- If at least one of the two metacognitions regarding lack of control of the

thinking and the conviction of benefits from the type of thinking was present.

- If respondents had a desire to be able to stop that type of thinking.

Research method/data collection:

Quantitative method based upon a questionnaire with scores, distributed through social media.

The scale used in the questionnaire is PSS10.

The questionnaire was comprised of 8 questions, and was developed together with stress therapist and supervisor, Professor Rakesh Sondhi.

The survey was issued on April 15, 2019 with a deadline of April 30, 2019 and was distributed via LinkedIn and Facebook. The choice of this method was also based upon the idea that there would be no influence on the geography, ethnicity, social status, marital status, mental habitus, or general experience of the current stressful experience – in short: the respondents are as random as possible. The aim was that more than 300 respondents would answer the questionnaire to ensure the quantitative basis for answering hypotheses 1 and 2.

The following questions were included in this survey:

1. Are you male or female?

Purpose: To identify if there is a difference in stress perception, metacognitions, and desire to change the way of thinking between gender.

2. What is your age: 0-19; 20-30; 31-45; 46-65; 65+

Purpose: To uncover if there is a difference of experienced stress perception and metacognitions between different ages.

3. Which continent are you from?

Purpose: To uncover if there are cultural differences in stress perception, and the conviction of benefits or the necessity of having negative thoughts.

4. How much stress have you experienced on average seen over the last 3 months on a scale of 0 to 10 (0 = none/10 = max)?

Purpose: To clarify if there is a connection between the amount of stress, the gender, the perceived benefits of these thoughts, and the capability to control these negative thoughts.

- When experiencing stress, are your thoughts about the situation mostly about the past or the future? The past is 1 second ago and the future is in 1 second's time.

Purpose: To uncover the thought-time perspective – whether the thoughts are about the past, present, or future (hypothesis 1).

- Do you think there is value in having these thoughts about the past or the future?

Purpose: To uncover the positive metacognition dealing with a conviction that it is important or beneficial to have this kind of thoughts – that they are necessary.

- Do you experience being able to stop your negative thoughts about the past or the future?

Purpose: To uncover the negative metacognition regarding the conviction that it is not possible to control the negative thoughts – the focus of attention.

- Would you stop thinking these past or future thoughts if you could?

Purpose: This question also hedges the negative metacognition regarding the desire for the ability to control the negative thoughts.

Sampling method/profile:

Size of sampling: N=2,313 respondents; (N=429 men) and (N=1,860 women) (N=24 not answering question about their gender)

Age distribution:

AGE	0-19	20-30	31-45	46-65	65+	Total
MEN	6	34	164	211	14	429
WOMEN	31	103	723	966	37	1,860

Table 9: Age distribution study 2; Sølvhøj (2020)

Location:

Continent	Respondents
Europe	2,285
Africa	3
Asia	6
Antarctic	1
North America	7
South America	3
Oceania	4

Table 10: Location of respondents study 2; Sølvhøj (2020)

Advantages and disadvantages of method:

The advantages of this method are that it can accumulate a lot of data, and that it is possible to get comparable answers from multiple questions from many people, and get measurements from these.

A challenge with this quantitative questionnaire is that they are anonymous, so there is no insight into the individual in any situation. The survey cannot figure out if it is the same person, for example, that scores his own perceived stress high and simultaneously experiences that it is valuable to worry, or whether they are two different respondents.

It only shows the general trends.

Summary of method:

This quantitative method has provided a large volume of respondents who have all answered the exact same questions. This has given valuable information regarding the comparisons and differences between gender, age, thinking processes, metacognitions, and stress perception.

This relates to hypothesis 2.

5.3 Study 3:

A. The efficiency of changing thoughts in stress-treated clients.

Aims and objectives:

To research if working with clients that experience unwarranted stress can change that type of thinking by working exclusively with the metacognitions.

To study a phenomenon's quantitative traits, namely if the MINDstrain method has a therapeutic effect in stress treatment.

Research method/data collection:

Quantitative method reviewing data from the app in which the MINDstrain coaches register their clients' progress after each session.

The scale used in the MINDstrain app is PSS10.

Notes are registered in a spreadsheet.

Stress is not a clinical diagnosis; it will be the client's perception of his/her condition underpinning the qualitative measurement made from a scale of 0-10, where 0 is nothing, and 10 is the maximum.

MINDstrain follows the PSS10 scale:

0 - 3 = normal stress perception

4 - 6 = moderate stress perception

7 - 10 = severe stress perception

Initially at a client intervention, the MINDstrain coach asks the client about their perceived level of stress on a scale from 0 to 10, and their ability to control their thoughts, on the same scale. After each coaching session, the coach gives the device to the client and asks the client to register his/her experience of the current stress levels, and the ability to control one's thoughts / focus, also on a scale from 0 to 10.

Sampling method/profile:

Size of sampling: N=322 respondents; (N=133 men) and (N=189 women).

Age distribution:

The therapist does not register the age of the clients.

Location:

All clients registered in the app are living in Denmark.

Summary of method:

This quantitative method has provided data from a wide range of people that have been in stress treatment sessions, working exclusively with the 2 metacognitions that study 1 and study 2 have revealed are active when experiencing unwarranted stress.

The clients themselves have rated their stress perception before and after these sessions.

This relates to hypotheses 1, 2, and 3.

The comparisons between the three hypotheses and the three studies are presented here:

Hypothesis	Study 1	Study 2	Study3
<p>1. Stress is caused by a defined process of thinking that is driven by specific metacognitions, specifically a lack of control of thoughts, and a conviction of the necessity for these uncontrollable thoughts.</p>	X	X	X
<p>2. Negative thoughts about the future do not include a solution to the imaginary situation.</p>	X		X
<p>3. Thought processes that create stress can be changed internally by challenging these metacognitions, from an external source, regarding control of thinking and the necessity of having these thoughts.</p>			X

Table 11: Comparisons between hypotheses and studies; Sølvhøj (2020)

6. Analysis

6.1. Study 1: Research of previous stress clients

This study has investigated the following hypotheses:

Hypothesis 1:

Stress is caused by a defined process of thinking that is driven by specific metacognitions, specifically a lack of control of thoughts, and a conviction of the necessity for these uncontrollable thoughts.

Hypothesis 2:

Negative thoughts about the future do not include a solution to the imaginary situation.

476 respondents (N=190 men) and (N=286 women) were included in this study.

In the client intervention, the therapist does not ask the client for the content of the thoughts, (which would be a matter of content, and thus, a classic cognitive question) but only focuses on the thinking process. Therefore, the therapist does not necessarily have any knowledge of the external stressor that can activate the concerned thinking.

418/476 (N=418) directly stated that they worried when they experienced unwarranted stress, defined as thinking about something that has not yet occurred, and is a worst-case scenario with no solution to the situation.

The question the therapist asks the client is: "When experiencing stress, are your thoughts about the past, present, or future?"

58/476 (N=58) answered the above question, stating that they had negative thoughts about the future.

This represents the imaginary conceptions of the future produced and perceived as being inevitable in the sense that they do not contain a solution or opportunity to avoid this situation. It is in itself disturbing and anxiety-provoking, and thus, stress-inducing as the perception is genuinely experienced.

Age and gender:

AGE	19-29	30-39	40-49	50-57	Total
MEN	27	37	76	50	190
WOMEN	48	73	101	64	286

Table 12: Age and gender study 1; Sølvhøj (2020)

6.2. Study 2: Clarifying of thinking processes

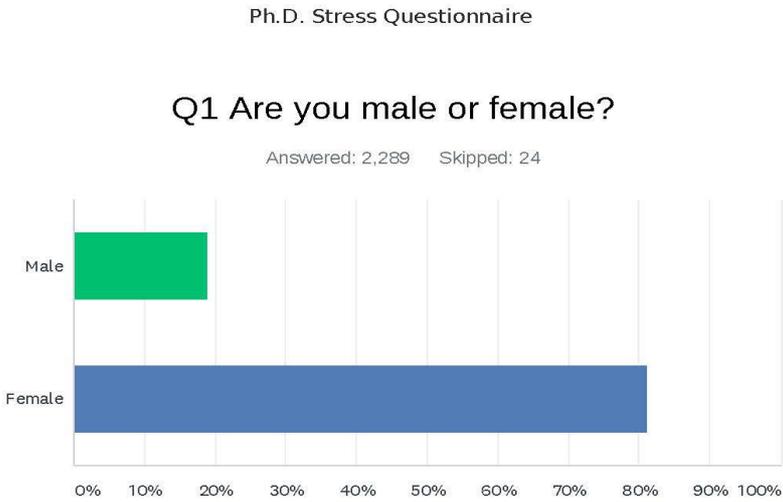
This study has investigated the following hypothesis:

Hypothesis 2:

Stress is caused by a defined process of thinking that is driven by specific metacognitions, specifically a lack of control of thoughts, and a conviction of the necessity for these uncontrollable thoughts.

2,313 respondents (N=429 men) and (N=1,860 women) and (N=24 not answering questions about gender) were included in this study, with the following general replies. A comprehensive analysis of the data found in Appendix 1.

Figure 1: Gender



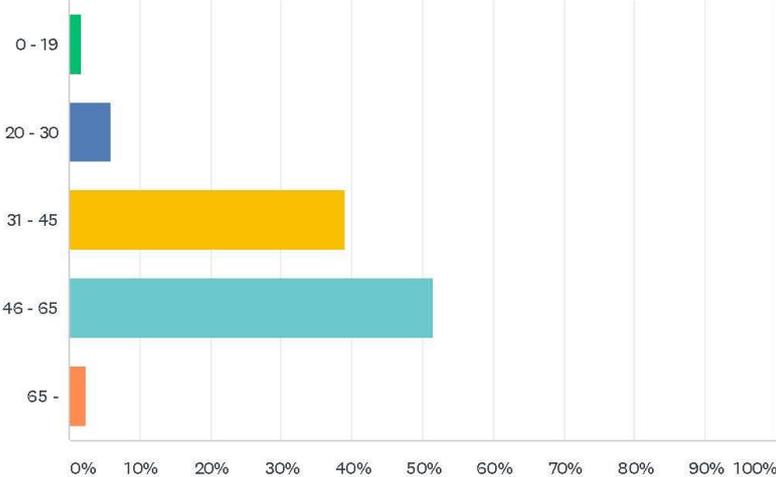
ANSWER CHOICES	RESPONSES	
Male	18.74%	429
Female	81.26%	1,860
Total Respondents: 2,289		

Figure 2: Age

Ph.D. Stress Questionnaire

Q2 What is your age?

Answered: 2,309 Skipped: 4



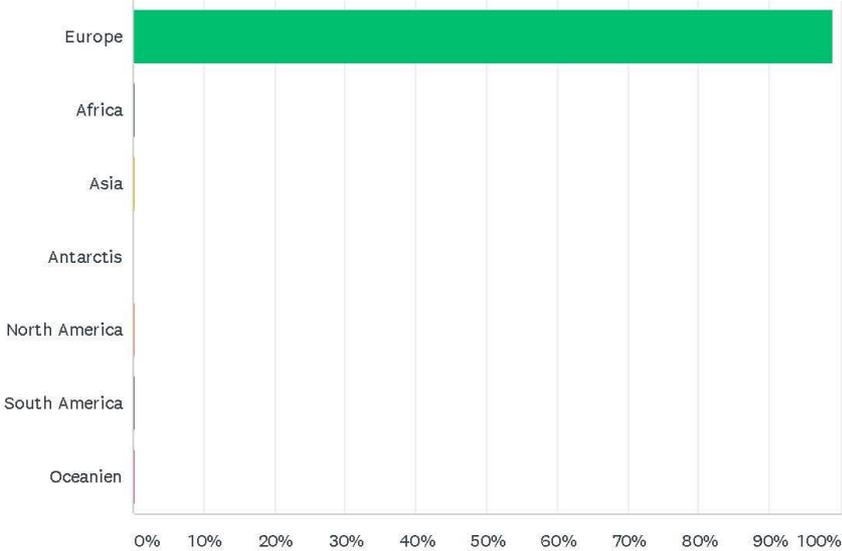
ANSWER CHOICES	RESPONSES	
0 - 19	1.60%	37
20 - 30	5.93%	137
31 - 45	38.89%	898
46 - 65	51.36%	1,186
65 -	2.25%	52
Total Respondents: 2,309		

Figure 3: Continent

Ph.D. Stress Questionnaire

Q3 Which continent are you from?

Answered: 2,308 Skipped: 5



ANSWER CHOICES	RESPONSES	
Europe	99.00%	2,285
Africa	0.13%	3
Asia	0.26%	6
Antarctis	0.04%	1
North America	0.30%	7
South America	0.13%	3
Oceanien	0.17%	4
Total Respondents: 2,308		

Figure 4: Level of stress perception

Ph.D. Stress Questionnaire

Q4 How much stress have you experienced on average over the last 3 months ?0 = nothing 10 = max

Answered: 2,308 Skipped: 5

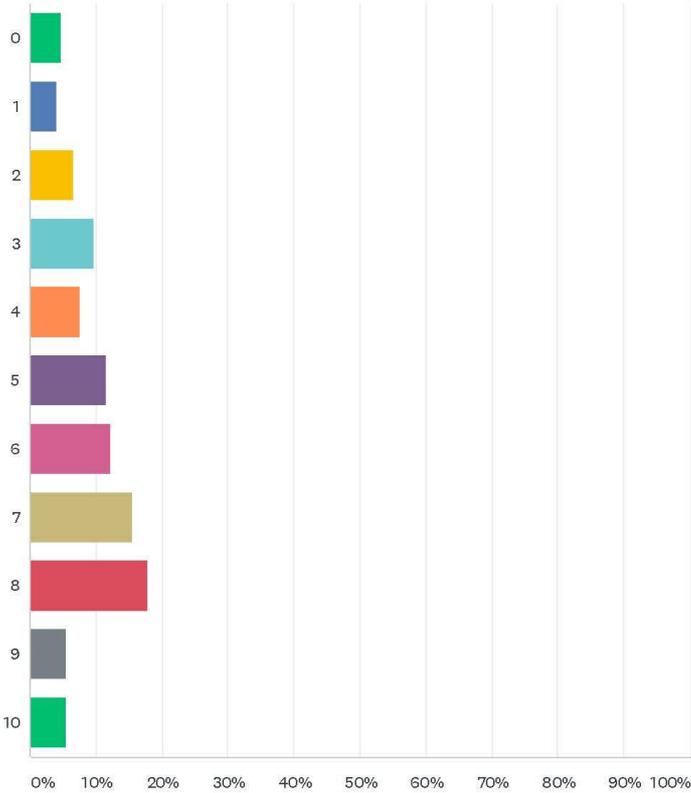


Figure 4 extended:

Ph.D. Stress Questionnaire

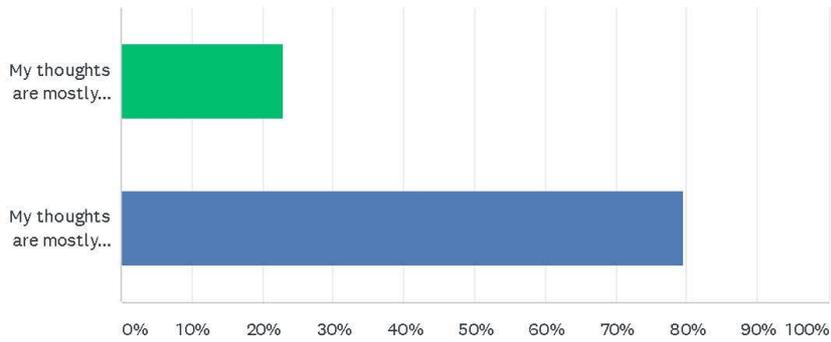
ANSWER CHOICES	RESPONSES	
0	4.59%	106
1	3.90%	90
2	6.41%	148
3	9.62%	222
4	7.50%	173
5	11.57%	267
6	12.22%	282
7	15.55%	359
8	17.76%	410
9	5.37%	124
10	5.50%	127
TOTAL		2,308

Figure 5: Thought-time perspective

Ph.D. Stress Questionnaire

Q5 When experiencing stress, are your thoughts in the situation mostly about the past, or the future?The past is 1 second ago, the future is in 1 second

Answered: 2,300 Skipped: 13



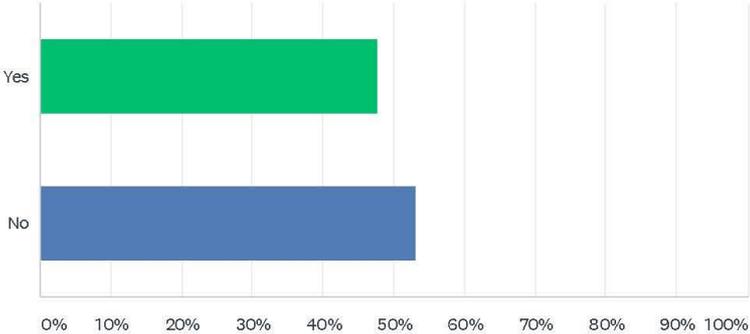
ANSWER CHOICES	RESPONSES	
My thoughts are mostly about the past	22.87%	526
My thoughts are mostly about the future	79.52%	1,829
Total Respondents: 2,300		

Figure 6: Utility/Benefits/Value - Positive Metacognition

Ph.D. Stress Questionnaire

Q6 Do you think there is value in having these thoughts about the past or the future ?

Answered: 2,305 Skipped: 8



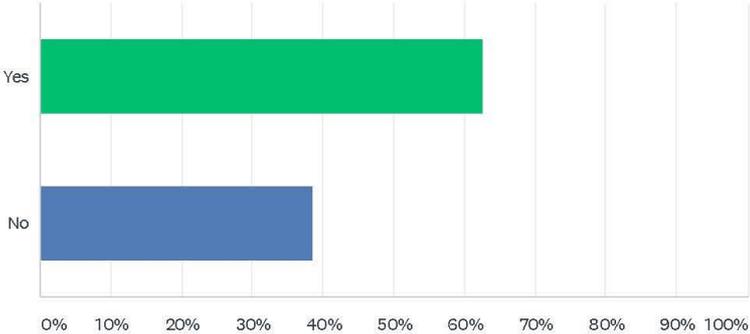
ANSWER CHOICES	RESPONSES	
Yes	47.72%	1,100
No	53.06%	1,223
Total Respondents: 2,305		

Figure 7: Perceived ability to control one's thoughts - negative metacognition

Ph.D. Stress Questionnaire

Q7 Do you experience being able to stop your negative thoughts about the past or the future?

Answered: 2,302 Skipped: 11



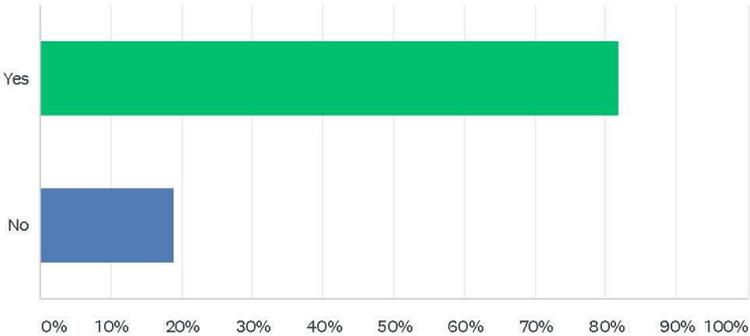
ANSWER CHOICES	RESPONSES	
Yes	62.47%	1,438
No	38.58%	888
Total Respondents: 2,302		

Figure 8: Desire to control one's thoughts - negative metacognition

Ph.D. Stress Questionnaire

Q8 Would you stop thinking these past or future thoughts if you could?

Answered: 2,304 Skipped: 9



ANSWER CHOICES	RESPONSES	
Yes	81.73%	1,883
No	18.84%	434
Total Respondents: 2,304		

79.52% (N=1,829) of respondents could identify that when they experienced unwarranted stress, they had thoughts that were primarily oriented towards the future.

47.72% (N=1,100) of these saw that the thoughts had some form of usefulness, importance, and necessity.

81.73% (N=1,883) of respondents would like to stop having these thoughts if they could control their thoughts.

62.47% (N=1,438) of respondents believe they are able to stop their thoughts, but do not want to - probably because they feel that they are useful or beneficial.

6.3 Study 3: The efficiency of changing thoughts

This study has investigated the following hypothesis:

Hypotheses 3:

Thought processes that create stress can be changed internally by challenging these metacognitions, from an external source, regarding control of thinking and the necessity of having these thoughts.

322 respondents are included in this study, conducted by 47 different MINDstrain coaches, geographically located all over Denmark.
(N=133 men) and (N=189 women).

At the first session with the MINDstrain coach, the average level of stress was registered at 6.96 at PSS out of 10.

See table 13 and 14.

The final session registered in the app, showed that out of the total of 322 respondents, the average level of stress was 2.079 at PSS out of 10.

14/322 respondents are on PSS 3 or lower after the first intervention.

34/322 respondents are on PSS 3 or lower after the second intervention.

56/322 respondents are on PSS 3 or lower after the third intervention.

78/322 respondents are on PSS 3 or lower after the fourth intervention.

133/322 respondents are on PSS 3 or lower after the fifth intervention.

4/322 responders are on PSS 3 or lower after the sixth intervention.

3/322 responders are on PSS 3 or lower after the seventh intervention.

PSS – Perceived Stress Scale	Number of Clients First session – (av. final PSS)	Number of Clients Final session
0	0 (0)	37
1	3 (0)	75
2	6 (1,66)	87
3	17 (2,15)	61
4	15 (2,54)	29
5	32 (2,0)	19
6	38 (1,79)	6
7	68 (3,43)	5
8	87 (2,28)	2
9	36 (2,43)	1
10	20 (2,51)	0
TOTAL	322 (2,079)	322

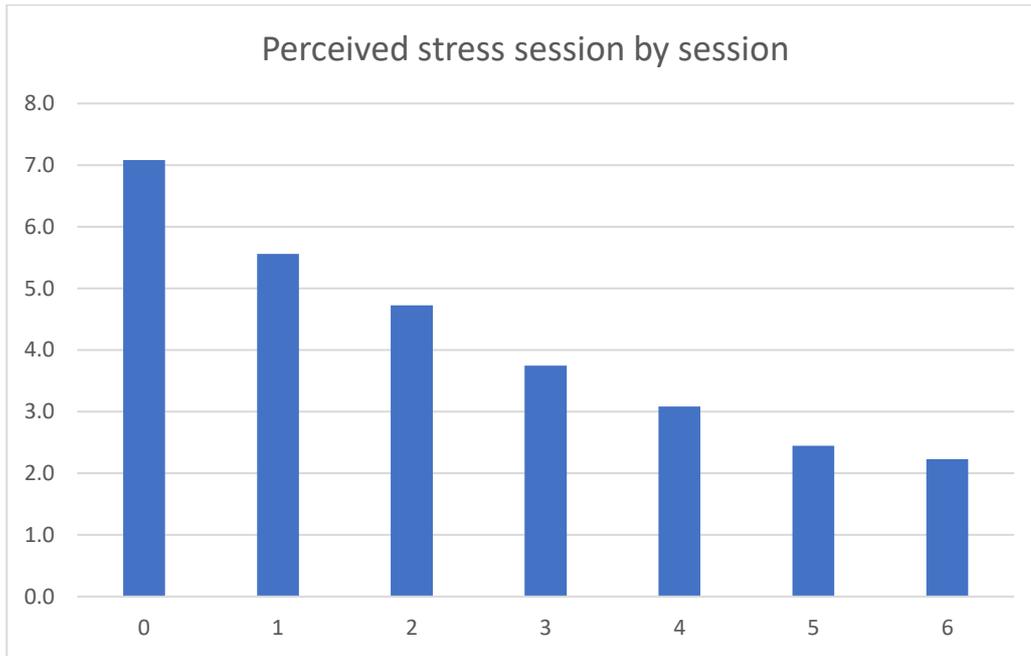
Tablet 13: Overview of clients' PSS; Sølvhøj (2020)

Column 1: PSS – Perceived Stress Scale

Column 2: Numbers of clients at the PSS at the first individual session and average final PSS

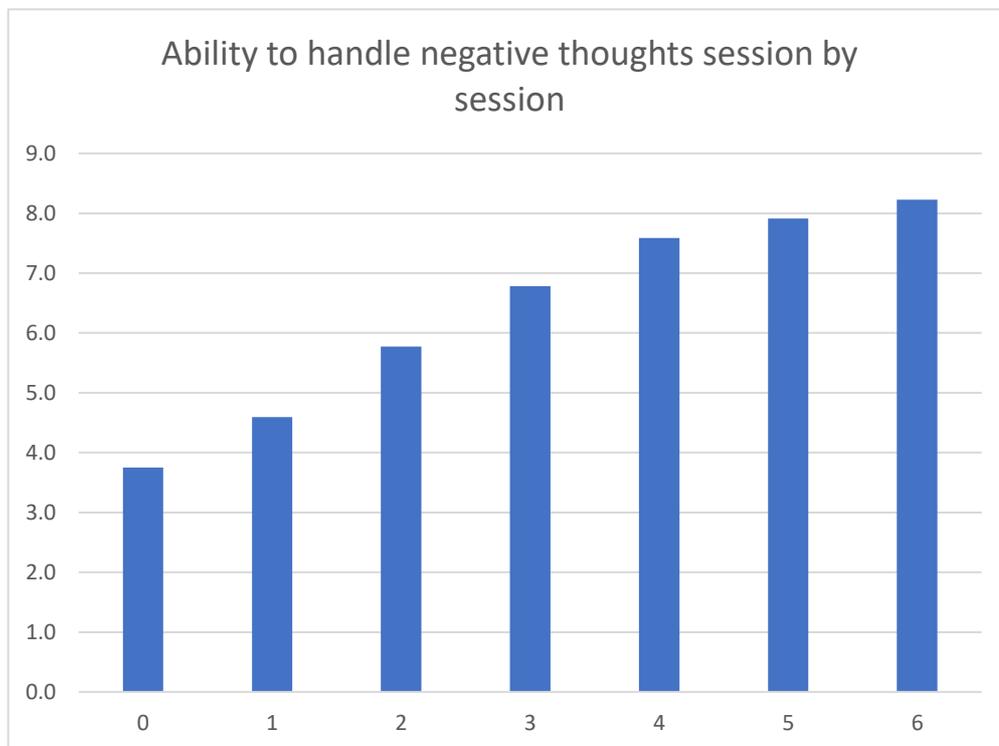
Column 3: Numbers of clients at the PSS at the final individual session.

The average number of sessions by completed clients are 3.78.



Y = PSS – X = number of sessions

Table 14: PSS per session; Sølvhøj (2020)



Y = Capability – X = number of sessions

Table 15: Ability to handle negative thoughts per session; Sølvhøj (2020)

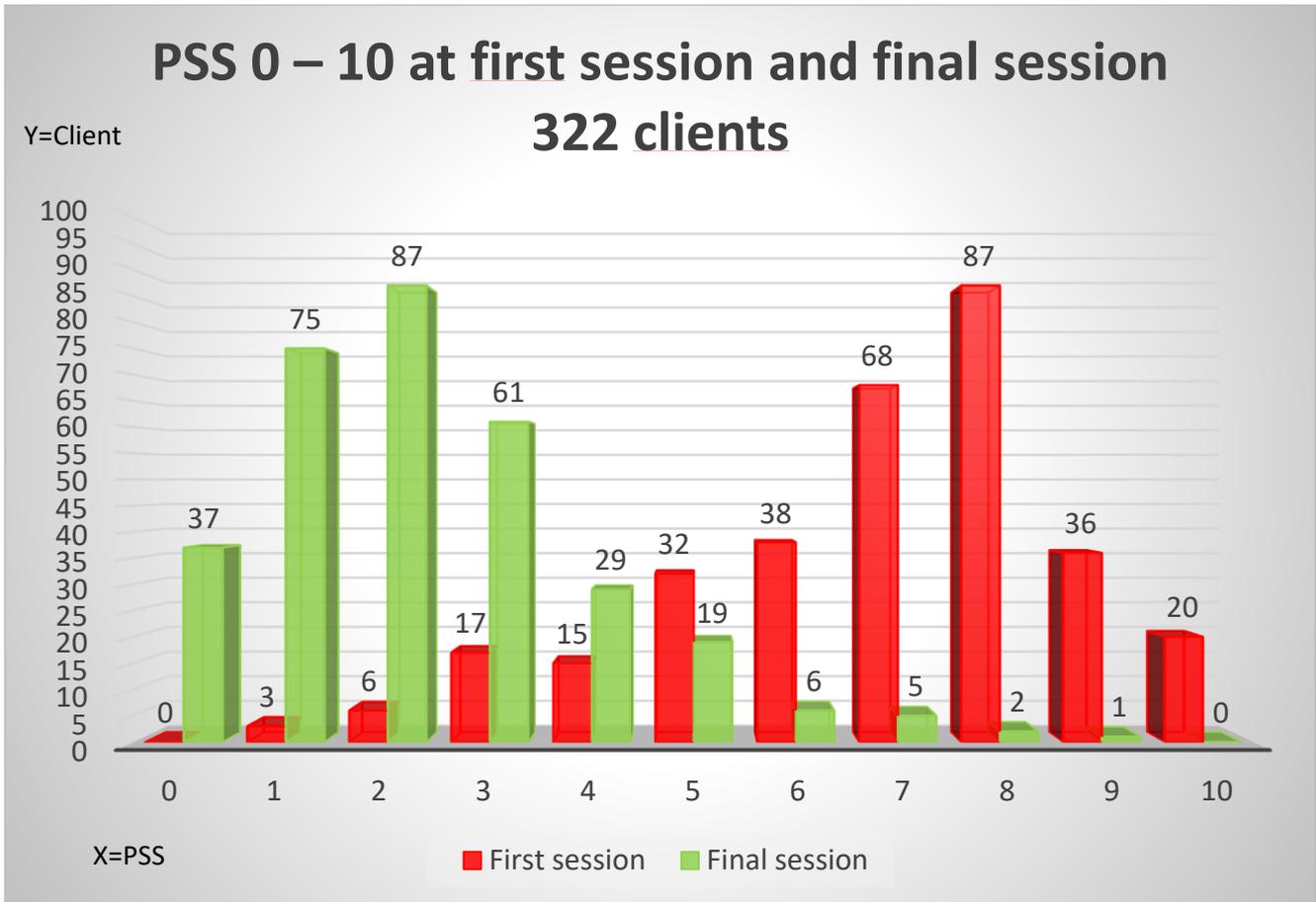


Table 16: Diagram of clients' stress perception; Sølvhøj (2020)

Of these 322 respondents, 98% of those experiencing stress are at a stress level from PSS scale 0 to 10 (0 = none - 10 = max) on an assessment level between 1-3 within 5 hours of MINDstrain intervention. 1% of those registered have had the need for six sessions and 1% have needed a total of 7 sessions of coaching. There are no registered clients in need of more than 7 sessions.

Therefore, all respondents are within what is referred to as normal stress perception after intervention by a MINDstrain coach.

Of the 322 registered clients, there is a case of relapse or re-treatment of two clients.

7. Conclusions

7.1 Introduction

Unwarranted stress - definition:

I define unwarranted stress as a state that is not self-supporting, and which the individual experiences as stressful, both physically and mentally. This undesirable condition can be created by a thinking process, which is characterized by thoughts about situations that have not yet occurred and do not include solutions to the imagined situation. Thoughts that are future-oriented and simultaneously negative, categorized as catastrophic thoughts, or horror scenarios, and provided that the individual does not feel there is a solution or way out of these future situations, can cause the individual perceived powerlessness, lack of control and deadlock, causing agitation, anxiety, and stress.

7.1.1 Worries and concerns explained:

This type of thinking is defined as worries or concerns. A worry can be defined by two things:

1. It is thoughts that are future-oriented.
2. There are no solutions included in the future scenario.

The human brain is one of the most complex things we know of in the universe, and although there is a lot of research specifically about the brain, we still know very little about how the brain actually functions. One of the things research shows is that the brain is not always able to distinguish between fiction and reality, which becomes very clear when we, for example, are watching a movie where we become frightened, or we become emotional about something we are told; in other words, we react as if it was real. We respond both physically and mentally, as if it happened in reality. This is precisely true when we have ideas about future worst-case scenarios, and it does not contain a solution for this scenario. We respond physiologically as if it were reality.

Overall, my hypothesis, that there is a very specific thought process that is stress-inducing in individuals who experience unwarranted stress, has been confirmed by 86% of the total respondents in this research.

7.1.2 Specific thinking processes that creates stress:

The thinking process I wanted to uncover consists of the following elements:

- Thought-time perspective (past - present - future)
- Specific metacognitions:
 - a. A “negative” belief that the individual cannot control his/her thoughts – his/her focus, and in some cases, a negative conviction that thought contents can be harmful.
 - b. A "positive" belief that there is a kind of value in having these thoughts. This conviction is by no means positive, but it is experienced as such because it justifies the thinking (concerns) as necessary.

If the individual can identify that there are concerns present at the experience of stress, recognizing that it is thoughts that are future-oriented, it is possible to identify which of the above metacognitions is also present. Just one of the two metacognitions need to be active to cause the concerns to continue.

I also wanted to uncover, given that the foregoing is true, whether it is possible, with the help of the MINDstrain method that focuses exclusively on metacognitions, to bring people experiencing concern thinking effectively out of this thinking process.

Studies 1 and 2 have aimed to investigate and uncover any thought-time perspective that is present during a stressful experience (if thought content is primarily oriented to the past or the future), and if the metacognitions are identifiable.

Study 3 has aimed to investigate the effect of using the MINDstrain method with clients who have experienced unwarranted stress. These clients have entered into stress coaching sessions where they initially experienced stress with moderate to severe stress on the PSS 0-10.

7.1.3 Thinking processes - definitions and specific elements:

A thinking process contains a number of elements:

1. Thought Content - what the individual thinks of
2. Thought-Time Perspective - which direction the thoughts are towards; past - present - future
3. Metacognitions – beliefs/convictions about the thinking from a meta perspective.

My hypotheses are therefore based on identifying the thought process that is present at the experience of unwarranted stress:

- Are thoughts primarily directed at the past, present, or future?
- Are there metacognitions present - that there is value in some kind of benefit by having these thoughts (worries)?
- Are there metacognitions present revealing a lack of mind control, i.e. that the individual does not experience being able to control his/her thoughts?
- Is there a desire to control his/her thoughts of stress (change of the metacognition; lack of control of thoughts)?

This type of thinking is driven by two different metacognitions - underlying beliefs about our thoughts:

- A negative metacognition: the conviction that it is not possible to control/stop his/her thoughts, and an element of those thoughts can be harmful/hazardous.
- A positive metacognition: the conviction that there is a perceived form of value, importance, or necessity in having those concerns.
- 79.52% (N=1,829) of respondents could identify that the experience of unwarranted stress had thoughts that were primarily oriented towards the future. This supports the idea that based on a temporal perspective, negative thoughts about the future is an essential element in the type of thinking that is present during unwarranted stress.
- 47.72% (N=1,100) of these saw that there was some form of usefulness,

importance, and necessity in having these negative thoughts (concerns).

- 81.73% (N=1,883) of respondents would like to stop having these thoughts if they could control their thoughts.
- 62.47% (N=1,438) of respondents believe they are able to stop their thoughts, but do not want to - probably because they feel that these thoughts are useful.

Since a method (MINDstrain) has been developed to influence these metacognitions, my third hypothesis, therefore, examines the extent to which this is possible, and with which processing speed is this possible.

7.2 Boundary

My research has had the purpose to clarify:

- Whether it is possible to determine the specific thinking processes that are present in connection with the human experience of unwarranted stress.
- If there is a specific thinking process, will it be possible to diagnose stress.
- If it is possible, by working with the MINDstrain method, to relieve stress and anxiety in people who have this stressful thinking process in a quick, efficient, and at the same time, gentle way.

I am aware that I only can say something about the people who are part of my research, and I cannot speak in general from my results, though there is a generic thinking process that seems to be present in all three studies with respondents who experienced unwarranted stress.

My research does not include reflections on the mental or physical habitus respondents have been in, since it was not possible to access this knowledge, especially in study 2, where respondents were addressed via social media.

7.3 Hypotheses and conclusions

The research has provided 3 hypotheses:

1. **Stress is caused by a defined process of thinking that is driven by specific metacognitions, specifically a lack of control of thoughts, and a conviction of the necessity for these uncontrollable thoughts.**

Conclusion:

Study number 1 (478 respondents) and study number 2 (2.313 respondents) have proven that it is possible for the respondents to identify that they have negative thoughts about the future when experiencing unwarranted stress. They believe that they either cannot stop these thoughts, and/or that they do not want to stop having these thoughts because they have a conviction that it is necessary or beneficial for them to worry about the future.

86% of all respondents have that type of thinking, and 14% have not been able to give a clear answer. An explanation could be that many people mix up “today with the present” and therefore, might think that it is the same. With 86% of respondents instantly responding that they have negative thoughts about the future, the hypothesis is proven to be correct.

2. **Negative thoughts about the future do not include a solution to the imaginary situation.**

Conclusion:

Study number 1 (478 respondents) and study number 3 (322 respondents) have proven that when the respondents were asked if the negative thoughts were about the future, and if they had a solution to the future worst-case scenario they imagined, the answer was NO.

The hypothesis is proven correct: negative thoughts about the future when experiencing unwarranted stress do not include a solution to the situation.

3. **Thought processes that create stress can be changed internally by challenging these metacognitions, from an external source, regarding the control of thinking and the necessity of having these thoughts.**

Conclusion:

Study number 3 (322 respondents), based upon data from 47 different MINDstrain coaches that register clients in an app, has proven that 98% of clients that have been in stress treatment sessions with the MINDstrain method, can change their thinking process from worrying to a more self-supportive way of thinking, and significantly reduce their perceived stress level, within 5 one-hour sessions.

The hypothesis has been proven correct.

7.4 Final words

It can be concluded that in more than 86% of the total respondents (N=3,111) it can be detected that there is a fixed variable; thinking about the future that does not include solutions = concerns/worries.

It can also be concluded that by being aware of the thought-time perspective (past, present, or future) and identifying worries/concerns, combined with a recognition that there is no benefits to that type of thinking, and that it is possible to change the focus to solution-focused thinking, people can be brought out of unwarranted stress very efficiently.

All 3 hypotheses have been proven correct, one by one.

8. Recommendations

8.1 The research and the MINDstrain origin

Key findings from the research

The key findings in the research are truly connected to the MINDstrain method.

Each element in the MINDstrain method is designed to:

- Identify the time perspective of the content of the thoughts (worrying or ruminating)
- Clarify the positive metacognition of benefits and/or necessity
- Clarify the negative metacognition of lack of control
- Cause awareness of the awareness – changing the focus
- Restructure the metacognitions to a more self-supporting conviction

Study 1 has shown that clients with unwarranted stress have negative thoughts about the future that do not include solutions or possibilities out of the imagined situation.

It also identified that the respondents believed that they could not stop worrying, and in some cases, there was a conviction that it was beneficial to worry.

Study 2 also clarified that 86% of clients with stress have negative thoughts about the future, and that the 2 metacognitions were present in all respondents.

Study 3 documented that working with metacognitions is so efficient that 98% of all respondents were capable of handling unwarranted stress in a far more self-supportive way.

The MINDstrain origin

The method in MINDstrain is rooted in metacognitive theory and further developed from that. The MINDstrain method is built up upon different visual metaphors to make it easier for clients to learn and remember the elements in the model. I have explained this further in the section about the MINDstrain coach's intervention.

Individuals, businesses, and society in general can, by empowering themselves to understand these thinking processes better, both prevent and reduce the loss of human resources, and enhance overall well-being and performance by reducing unwarranted stress.

The rapidly escalating rise in numbers of people globally that experience unwarranted stress can be changed by understanding and learning to identify and change these very destructive types of thinking. We can change the general well-being for many people.

I was interested in exploring a new and different way to prevent and manage stress, in which the aim was to design an approach that has an effect on both the short-term and long-term. In this context, my starting point was in metacognitive therapy, which only deals with our beliefs, thoughts about thoughts and feelings, and thoughts about bodily reactions.

These thoughts, termed as metacognitions, are a natural part of our thinking and the thought processes we use.

Thought processes run by these underlying meta thoughts are best described as the beliefs we have that occur in many different ways.

8.2 The specific metacognitions explained

Metacognitions are to be compared with beliefs about our thinking mixed with conscious thinking. However, these beliefs are often unconscious and therefore, challenged very rarely.

- a. The specific negative metacognition deals with the conviction of an inability to not being able to control his thoughts - his attention. He will have a feeling of being trapped in his own fantasy, and have no impact on what he considers and how long until this thinking is done, stops. This metacognition may also contain an element of harm or danger, so that the person can have the conviction that one's own thoughts can lead to both physical and psychological damage. The study conducted by the University of Wisconsin revealed that the people who had this kind of metacognition had an increased mortality rate of 43%. Convictions about not being able to control one's own thoughts, and thoughts of the harmfulness, will be perceived negatively, and therefore, defines this metacognition as being negative.
- b. The specific positive metacognition deals with the conviction that it is beneficial for us to worry - that it is necessary or that there is some importance in that worry. We can thus justify, excuse, and/or explain

to ourselves that it is ok to continue to worrying. This may, in itself, be the reason for the continuation of concern thinking. Still, other reasons can be attributed to this; there is a certain sense of identity associated with worrying. This could be “I’m not a good parent if I do not worry about my children,” or “I have to worry about my job or else I’m not a good employee or manager.” Even though this metacognition is described as positive, it is never positive because it keeps the individual in the thinking that can be stressful - namely concerns.

When the thinking process is identified and the metacognitions are challenged, while at the same time providing evidence to the person that there is no benefit or advantage worthy of thinking in a way that is present and is stressful, they can be changed.

The person must have changed the negative metacognition, showing that it is possible to switch his attention and his focus to a more self-supporting thinking type, requiring that the negative thought process, here defined as worries, are replaced by a more self-supporting thinking process, in this case, solution-focused thinking. When this is done, there will be a decrease in the perceived stress experience, and the client will cope with his mental state without unwarranted stress.

Link to studies: *This is related to study 3.*

There are so many good reasons to look into the research of metacognitive therapy, and just in my development of the MINDstrain method. I used the science of metacognitive therapy and defined the very specific metacognitions that run the CAS (Cognitive Attentional Syndrome) when it comes to stress. That said, I have also adapted the method so the specific focus on stress, and the thought processes related to this, also could work with anxiety related to the stress. I am faithful to the basic elements and principles of metacognitive therapy; we focus on the thought processes and not mental content, as well as focusing on the negative and positive metacognitions, thus avoiding CAS and subsequent stress.

8.3 The efficiency of changing thoughts

All MINDstrain coaches use an app developed and operated by Add2Work, in which all the therapists who work with the MINDstrain method are to record their clients’ subjective

perceptions of stress on a scale from 0 to 10, as well as their ability to stop/control these thoughts on a scale from 0 to 10 according to the PSS method.

Link to study: *Study 3 received the data from this app.*

It is obvious that it is the client's assessment underlying the registration of his experience of stress levels and ability to control his thoughts, but since there is an objective assessment of the client's stress level, this qualitative method as a starting point assesses this.

These clients are sourced from Securitas Strain Line directly to the individual MINDstrain coach, and involves neither me nor MINDstrain as a company. Securitas Strain Line is a product Securitas provide for public and private companies employees, who after the conclusion of the agreement with Securitas, can refer to a certified MINDstrain coach whenever the person is suffering with unwarranted stress.

Clients referred may be in an early stage of their stress response, and thus, be almost fully functional. Clients can also be on sick leave and homebound with a very massive stress response. The initial telephone conversation between the MINDstrain coach and the individual client reveals this as the MINDstrain coach asks about the client's stress level of PSS 0-10 and the client's ability to control his thoughts, also on the same scale. Finally, the MINDstrain coach also asks about the client's quality of sleep, which is relatively new and not yet available because there is not enough respondents to provide clear evidence of the method's ability to influence this yet.

Data from these clients are carefully analyzed to investigate whether the method can bring each client out of unwarranted stress quickly and efficiently, as well as if the individual client has a perception that they are able to control their thoughts in the future in a self-supporting manner, so that they continue to prevent unwarranted stress responses. The ability to control his thoughts is entered in the client's response before, during, and after the intervention.

Link to studies: *This is related to study 3.*

8.4 The MINDstrain method

With inspiration from the primary literature about metacognitive therapy, I have developed this model, the MINDstrain structure:

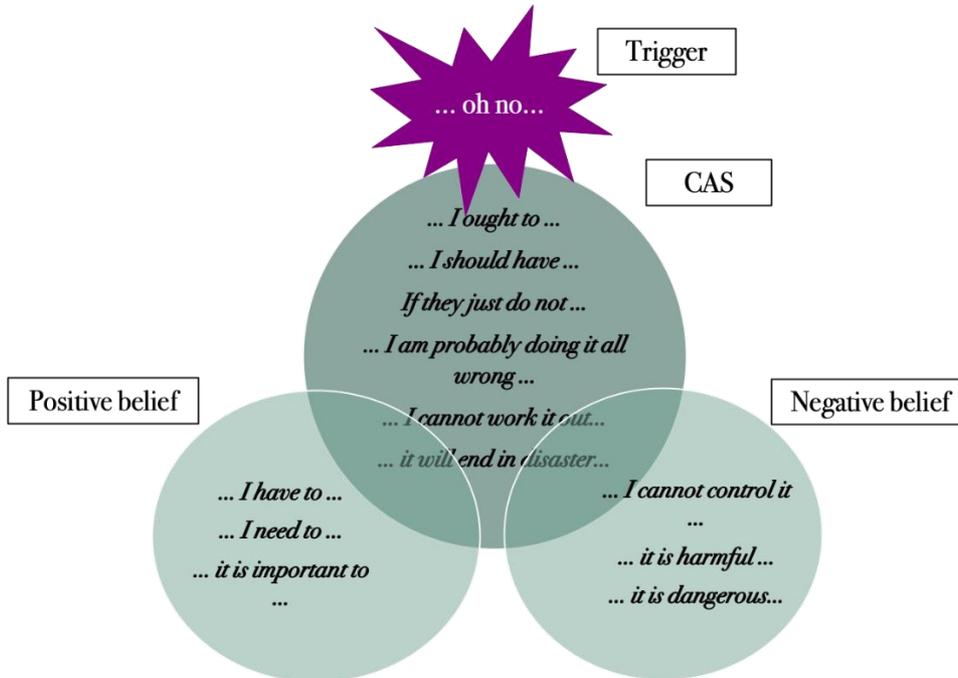


Table 17: The MINDstrain model; Sølvhøj (2014)

The model shows the relationship between the trigger thoughts, CAS, and the positive and negative metacognitions - beliefs. If we are not aware when we give our trigger thoughts a negative meaning, and if we do not move the attention away from them, but engage with them, we continue into the CAS. Here, our thoughts and feelings are negative, and therefore, we end up in negative thought spirals. When in CAS, we only ponder or worry, and we do not move into specific actions.

It is the positive and negative metacognitions that keep the CAS going, and it is these that must be identified and “punctured”, to stop the CAS. This is identical to the model used in metacognitive therapy (Wells, 2011).

I have made the MINDstrain model more specific in several areas, which is not part of the research within the metacognitive therapy, but that makes it better. On a more concrete level, it is related directly to stress treatment and stress prevention. Below are listed three elements, which I have further developed within the MINDstrain model from the metacognitive principles:

The contents of the CAS (the actual content of the mind) can, from a time perspective level, deal with either past or future thoughts; we explain it as “the CAS can rotate in two directions.” When it comes to the left turn, the thoughts are towards the past, and it is here that we ponder and ruminate. When it comes to the right turn, the thoughts are turning towards the future, and it is here that we worry and have concerns. Stress occurs whenever we worry too much. We can only feel stress about something that has not yet occurred – that which is future-oriented, and at the same time, does not include solutions / possibilities. We cannot experience stress about something that has happened. Since coaches trained in the MINDstrain method work with stress management, we focus on worry thoughts that are always future-oriented. Although we do not experience stress when the CAS is moving towards the past, we can still feel bad and become unbalanced in other ways. For example, we experience sadness and shame due to things that happened in the past, which we may regret or do not understand.

Link to studies: *This is related to study 1 and study 2, where the client/respondent reports that they have negative future-oriented thoughts when experiencing unwarranted stress.*

Past-oriented thoughts that are negative are often based upon the need to understand what happened of the past; we are looking for an answer or explanation, and we want it to make sense to us. The reason that we are captured in these ruminations is that we do not trust the answers or explanations of our conclusions. Therefore, we continue to ponder over this past scenario. Since humans are meaning-seeking and meaning-creating individuals, we cannot relate to having experienced something that is not meaningful.

Link to studies: *This is related to study 1, study 2 and study 3, where clients/respondents report that they feel they have to ruminate in order to find answers. That is driven by the positive metacognition, which is a conviction of necessity.*

This model shows the perspective within our thinking:

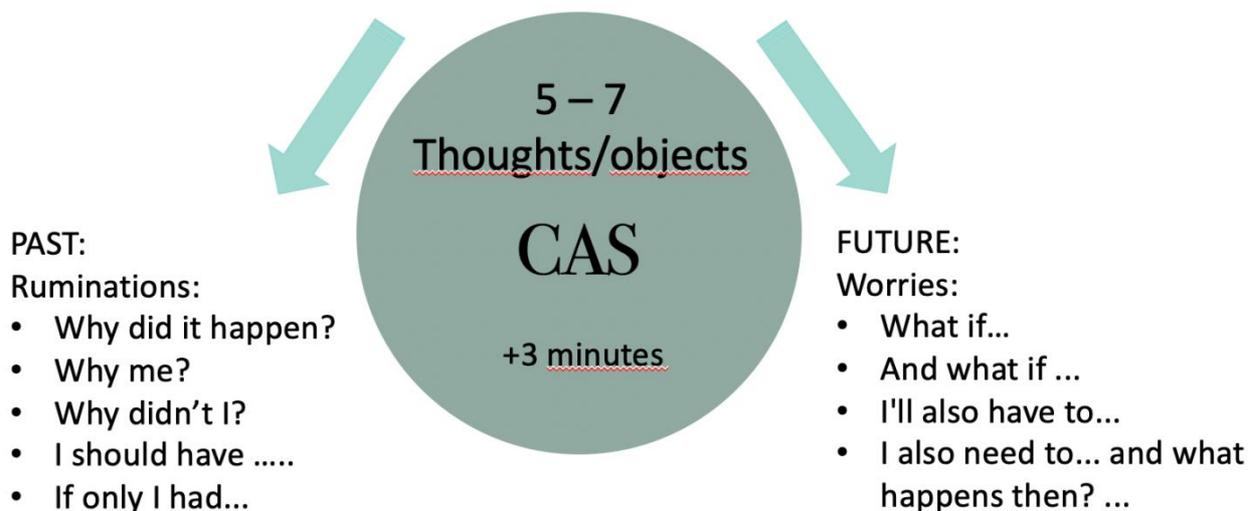


Table 18: Explanation of rumination and worrying; Sølvehøj (2014)

When we take learning points from past experiences, it becomes meaningful – it creates meaning, and we can more easily relate to the past, and therefore, accept it and leave the depressing thoughts.

This is shown below:

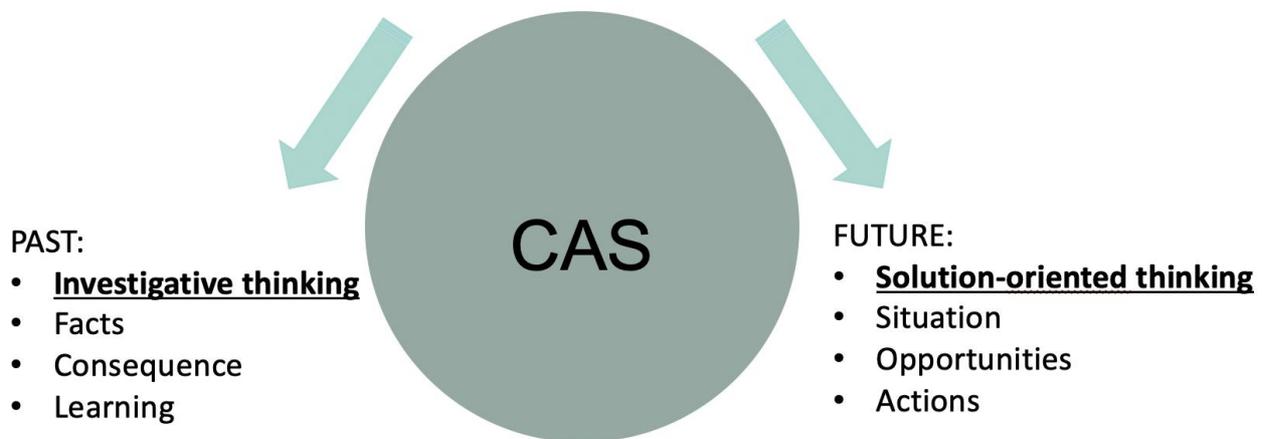


Table 19: Self-supportive thinking; Sølvhøj (2015)

1. What we characterize as a worry/concern is a thought that exists in the CAS. It is always future-oriented and does not include a solution. Thus, our concern consists exclusively of thoughts, not actions. This is inspired by Callesen, who emphasizes that as long as we are in the CAS, we do not act. We think only, and as long as we only think, we will not change anything about our own situation. We will not solve our problems (Callesen, 2017).

Link to studies: *This relates to study 1 and study 3, where the clients report that they did not find a solution to the worry, even though they spend remarkable amounts of time worrying.*

2. We have defined ways of thinking that can replace ruminations and worry thoughts respectively. The way of thinking that can replace ruminations, we call investigative thinking. In this type of thinking, there are three elements:

- 1) What are the facts / what happened specifically?
- 2) What were the consequences?
- 3) What can be learned from it?

To reach the learning from our experiences is related to learned optimism, where Seligman focuses on the importance of using the past constructively by learning from it and building experience (Seligman, 2006).

The way of thinking that can replace worries, we call solution-focused thinking. It also consists of three elements:

- 1) What is the situation?
- 2) What are my options?
- 3) What I will do!

This is also inspired by Pia Callesen and her focus on ensuring that we are only thinking, and not acting, when we are in the CAS (Callesen, 2017). She explains the CAS as an overthinking problem and that we, among other things, stop overthinking by acting and doing things in our lives. Furthermore, it is inspired by the fact that we have an internal focus when we are in the CAS.

Link to studies: *Study 3 shows that when the client has learned to stop worrying and switches to solution-focused thinking, the PSS drops remarkably from session to session.*

The internal-controlled focus is characterized by having an exaggerated self-focus, in which we analyze and think about ourselves and own situation. The opposite is an external-controlled focus; how we relate to the world around us, and where we see opportunities for ourselves in our surroundings (Wells & Fisher, 2009; Wells, 2011; Callesen, 2017).

When we replace worry thoughts with solution-focused thinking, we move the focus from our inner self to the external world, where we look at the opportunities that are around us, and decide how we will act in the external world.

8.5 The MINDstrain coach's client intervention:

When working with clients, the MINDstrain coach has initially exclusively focused on identifying the thinking process; determining if the stress experience is primarily oriented towards the past or the future; having the knowledge of the thinking type to be changed; and deciding whether the client should use the investigative thinking rather than brooding and ruminating over the past, or solution-focused thinking rather than worrying about the future.

It is essential to know which direction the content in the CAS is pointing, based upon the thought-time perspective, to identify whether it is primarily characterized by ruminations, worries, or both. The reason that it is important to identify this is to know whether investigative or solution-focused thinking should be used in its place. This is to stop the thoughts that are in the CAS, thus preventing stress developing into a destructive state of mind.

Link to studies: *Study 1, study 2, and study 3 have shown that unwarranted stress is related to negative future thoughts only. Therefore, it is extremely important to clarify the thought-time perspective; whether the content of the thought is regarding the past, present, or the future.*

The intervention is aimed at helping the client to recognize that it is possible to change their thinking type, which is oriented towards the negative metacognition that is perceived as a loss of control of the ability to control the mind, and to influence the positive metacognition indicating that worrying is useful. This is achieved through specific exercises aimed at the awareness of awareness.

When the client themselves experiences and recognizes that it is possible to control their attention and that there is no value in worries, then learning the self-supporting thinking process is carried out.

Link to studies: *Study 1, study 2, and study 3 have shown that a large amount of respondents report that they feel that they cannot stop worrying, and that it is due to the negative metacognition.*

The MINDstrain coach tells the client to calculate the average daily time they spend on either pondering or worrying. If it is, for example, 3 hours a day over 6 months, the MINDstrain coach calculates, together with the client in this case, that it adds up to about

540 hours. The MINDstrain coach is thereby creating an acknowledgment within the client that this type of thinking has not produced the desired result, and thus, the positive metacognition that creates the belief that it is necessary to think so, is challenged. A recognition of this by the client supports an amendment of this conviction.

The MINDstrain coach can also challenge this positive metacognition by asking what the client will lose by stopping his concerns, thereby affecting both motivation directions (obtain / avoid), for the client.

Link to studies: *Study 1, study 2, and study 3 prove that this metacognition is active, and one of the reasons that the client worries is that they think that it is beneficial or necessary to worry.*

When it is recognized by the client that there are no benefits from worrying, the MINDstrain coach continues to challenge the conviction about the ability to stop worrying - the negative metacognition.

8.6 Use of metaphors

Metaphors can help to create images and visualizations. These can clarify difficult points and help the client to better understand complicated psychological phrases.

Within the MINDstrain method, the coach uses many metaphors. For example the trigger thoughts are illustrated as corks that are held under water and are released. They just pop up in the surface of the water, just like trigger thoughts pop up in the consciousness from the subconsciousness.

A car metaphor is used to create a knowledge and understanding of what characterizes concerns and solution-focused thinking. Similarly, the metaphor, tumble dryer, simplifies the understanding of the CAS. To imagine that a stressed person will be able to recall definitions such as a Cognitive Attentional Syndrome, Metacognitions, cognitive flexibility etc. is not immediately possible, and certainly not if the client is already caught up in the CAS and has limited cognitive resources.

Much of the traditional approach to stress - regarding both preventive and curative measures - are oriented toward external factors such as work management, private matters, and so on. These can obviously be stressors that can trigger concern thinking and therefore, should not be excluded in general, but rather by the individual handling of the stress response, both physically and mentally, created individually through a

perception of the situation.

8.7 Psychoeducation – train the trainer

When you offer a client the possibility to learn, by using their own words to explain what has been presented to them, one learns more and remembers it far better according to the National Training Laboratory (Bethel Maine Research, USA, www.ntl.org). Therefore, the client is asked several times during the MINDstrain-coaching to use their own words. For example, when the client draws and goes through the MINDstrain model structure themselves, in order to better use the tools in between the individual sessions at the MINDstrain-coach, an enhanced learning is processed.

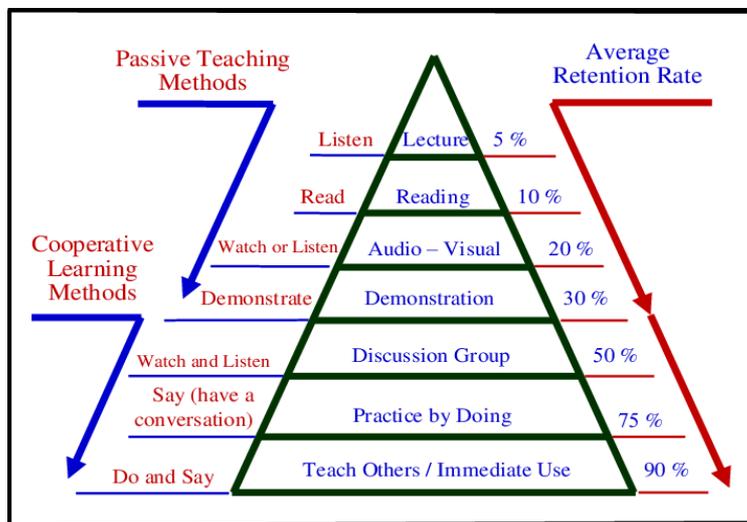


Table 20: Psychoeducation; National Training Laboratory, Bethel Maine Research, (1960's)

8.8 Summary

Of the 322 respondents in study 3, 98% of those experiencing stress are at a stress level from PSS scale 0 to 10 (0 = none - 10 = max) on an assessment level between 1-3 within 5 hours of MINDstrain intervention. 1% of those registered have had the need for six sessions, and 1% have needed a total of 7 sessions of coaching. There are no registered clients that have needed more than 7 sessions.

Therefore, all respondents are within what is referred to as normal stress perception, after intervention by a MINDstrain coach.

Of the 322 registered clients, there is a case of relapse or re-treatment of two clients.

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www.mindstrain.com

Appendix 1

The following is a general data collection from Study 2, which surveyed 2,313 respondents.

Gender

- There is a greater proportion of women surveyed than the proportion of men surveyed who responded 10 on the issue of perceived stress over the last 3 months.
 - 5.77% of women surveyed answered 10 to the question regarding the experienced stress over the last 3 months, whereas 4.21% of the men surveyed answered 10.
- There is a greater proportion of women surveyed than the proportion of men surveyed who answered 8 to the question regarding the experienced stress over the last 3 months.
 - 18.48% of women surveyed answered 8 to the question regarding the experienced stress over the last 3 months, whereas 14.72% of the men surveyed answered 8.
- There is a greater proportion of respondents of men than of women surveyed who responded 2 on the issue of perceived stress over the last 3 months.
 - 8.64% of the men surveyed answered 2 regarding the issue of perceived stress the over last 3 months, whereas 5.87% of women surveyed responded 2.
- There is a greater proportion of respondents of women than of men surveyed who have thoughts of the past.
 - 23.39% of the women surveyed have thoughts of the past, whereas 20.94% of men have it.
- There is a greater proportion of respondents of men than of women surveyed who believe that there is value in having negative thoughts.
 - 56.94% of the men surveyed believe that there is value in having negative thoughts, whereas 45.53% of women surveyed believe it.
- Just over half the men believe that there is value in having negative thoughts.
 - 56.94% of the men surveyed believe that there is value in having these thoughts.
- Just under half of women believe that there is value in having negative thoughts.
 - 45.53% of women surveyed believe that there is value in having negative thoughts.
- There is a greater proportion of respondents of men than of women surveyed who feel that they can stop their myriad of thoughts.
 - 64.37% of the men surveyed feel that they can stop their thinking, whereas 61.92% of the surveyed women experience it.
- 74.65% of men would stop their thoughts if they could, though 56.94% believe that there is value in having these thoughts.

- 83.33% of women would stop their thoughts if they could, though 55.28% believe that there is value in having these thoughts.

Age

- 25% of respondents aged 65+ would not stop their thoughts, even if they could.
- There is a greater proportion of respondents aged 65+ who experience that they can stop their thoughts than the proportion of respondents in the other age groups.
 - 74.51% of respondents aged 65+ feel that they can stop their thoughts, whereas 64.97% of the respondents aged 46-65 are experiencing it.
 - 60.97% of respondents aged 31-45 are experiencing it.
 - 48.91% of respondents aged 20-30 are experiencing it.
 - 51.35% of respondents aged 0-19 are experiencing it.
- Just under 50% believed that there is value in their thoughts, regardless of age.
- There is a greater proportion of respondents aged 65+ who have thoughts about the past than the proportion of respondents aged 20-30.
 - 32.65% of respondents aged 65+ have thoughts of the past, while 21.17% of respondents aged 20-20 have them.
- There is a greater proportion of respondents in the age group 0-19 years who have experienced stress at a 10 average over the last three months than the proportion of respondents in the other age groups.
 - 8.11% of respondents in the age group 0-19 years have experienced stress at a 10 average over the last 3 months, whereas:
 - 5.11% of respondents aged 20-30 have experienced it.
 - 5.57% of respondents aged 31-45 have experienced it.
 - 5.67% of respondents aged 46-65 have experienced it.
 - 0.00% of respondents aged 65+ have experienced it.
- 0% of 65+ experienced stress at a 9 or 10 on average over the last 3 months.
- 25% of 65+ replied 0 regarding the issue of perceived stress over the last 3 months.
- 0% of 0-19 year have answered 0 on the issue of perceived stress over the last 3 months.
- 73.07% of 65+ answered 0-3 to the question regarding perceived stress over the last 3 months.
- In each age group (except 65+) most respondents have answered 6-8 on the question of perceived stress over the last 3 months.
 - 64.87% of respondents in the age group 0-19 answered 6-8.
 - 52.56% of respondents aged 20-30 answered 6-8.
 - 50.50% of respondents aged 31-45 answered 6-8.
 - 41.46% of respondents aged 46-65 answered 6-8.
 - 17.31% of respondents aged 65+ answered 6-8.

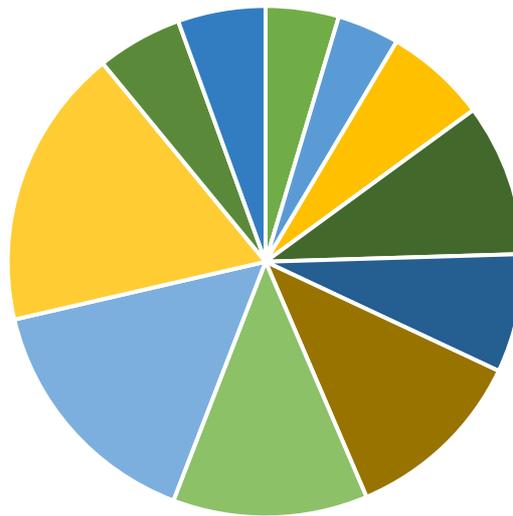
Bilateral findings:

- A slightly larger proportion of those who answered 10 regarding the issue of perceived stress over the last 3 months believe that their thoughts are beneficial to them.
 - 53.54% answered that they have value, while 48.82% answered that they have no value.
- The vast majority of those who answered 10 on the issue of perceived stress over the last 3 months would like to stop their thoughts if they could.
 - 89.76% responded that they would stop their thoughts, while 10.24% answered that they would not.
- The vast majority of those who answered 0-3 to the question regarding perceived stress over the last 3 months, found that they are able to stop the negative thoughts.
 - 83.17% of respondents who responded 0 experienced that they can stop it.
 - 81.11% of respondents who answered 1 experienced that they can stop it.
 - 81.08% of respondents who answered 2 experienced that they can stop it.
 - 76.13% of respondents who answered 3 experienced that they can stop it.
- Of those who responded that their thoughts primarily revolve around the past, most answered 5-8 to the question regarding perceived stress over the last 3 months.
 - 12.21% of respondents who answered the past experienced stress at 5.
 - 10.31% of respondents who answered the past experienced stress 6.
 - 14.50% of respondents who answered the past experienced stress at 7.
 - 19.08% of respondents who answered the past experienced stress at 8.
- Whether their thoughts were mainly about the past or the future, the vast majority would like to stop their thinking if they could.
 - 88.97% of respondents who answered the past wanted to stop them.
 - 80.01% of respondents who answered the future would like to stop them,
- It is almost evenly divided whether they think that their thoughts have value or not in terms of those who responded that their thoughts primarily deal with the future.
 - 49.18% of respondents who answered the future believe that ideas have value, while 51.59% think that they have no value.
- Of those who responded that they feel good to be able to stop their negative thoughts, most answered 5-8 to the question of perceived stress the last 3 months
 - 13.43% of respondents who answered that they may well stop their thoughts answered 5.
 - 13.29% of respondents who answered that they may well stop their thoughts answered 6.
 - 12.32% of respondents who answered that they may well stop their thoughts answered 7.
 - 13.29% of respondents who answered that they may well stop their thoughts answered 8.
- There are a few more who believe that their thoughts are valuable to those who responded that they feel good being able to stop their negative thoughts.

- 54.10% of respondents who answered that they may well stop the mind thinks they are valuable, while 46.59% think they are not valuable.
- The vast majority of those who responded that they do not experience being able to stop their negative thoughts, wanted to stop them if they could.
 - 93.13% of respondents who answered that they could not stop the mind would like to stop them if they could, while 7.32% would not stop them.
- There are more people who think that ideas are not valuable in terms of those who responded that they do not experience to be able to stop their negative thoughts
 - 63.29% of respondents who answered that they could not stop their negative thoughts responded that they believe the thoughts are not valuable, while 37.84% think that they are.
- Most of those who responded that they would stop their thoughts if they could answered 7 or 8 regarding the issue related to experienced stress over the last 3 months
 - 16.18% of respondents who answered that they wanted to stop their thoughts if they could have answered 7.
 - 19.16% of respondents who answered that they wanted to stop their thoughts if they could have answered 8.
- Most of those who responded that they would stop their thoughts if they could have answered that they do not see the value in having these thoughts.
 - 61.96% of respondents who answered that they wanted to stop their thoughts if they could do not believe that there is value in having these thoughts, while 38.84% think that they have value.
- Most of those who responded that they would stop their thoughts if they could have answered that they feel good being able to stop their thoughts.
 - 57.00% of respondents who answered that they wanted to stop their thoughts if they could, feel good being able to stop the mind, whereas 44.01% did not.
- Most of those who responded that they would not stop their thoughts if they could, have answered that they believe that there is value in having these thoughts.
 - 86.61% of respondents who answered that they would not stop their thoughts if they could, believe that there is value in having these thoughts, while 14.55% think that they have no value.
- Most of those who responded that they would stop their thoughts if they could have answered that they feel good being able to stop their thoughts.
 - 86.61% of respondents who answered that they would stop their thoughts if they could, feel good being able to stop their thoughts, whereas 15.01% do not.

Charts

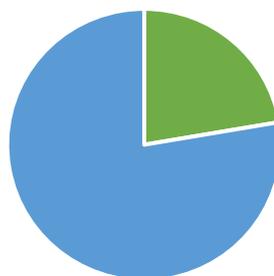
How much stress have you experienced on average over the last 3 months?



■ 0 ■ 1 ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 ■ 7 ■ 8 ■ 9 ■ 10

When experiencing stress, are your thoughts in the situation mostly about the past, or the future?

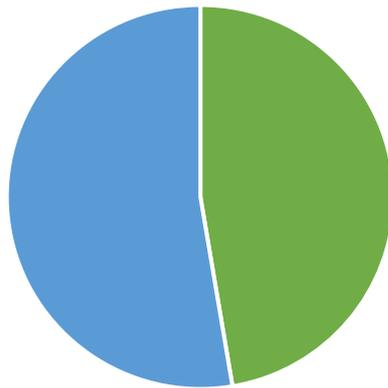
Future 79,52% - Past 22,87%



■ Past ■ Future

Do you think there is value in having these thoughts about the past or the future?

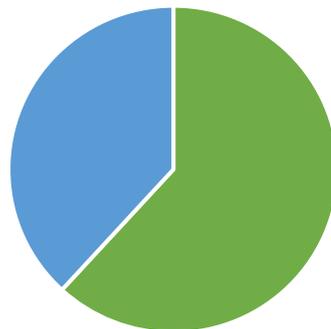
Yes 47,72% - No 53,06%



■ Yes ■ No

Do you experience being able to stop your negative thoughts about the past or the future?

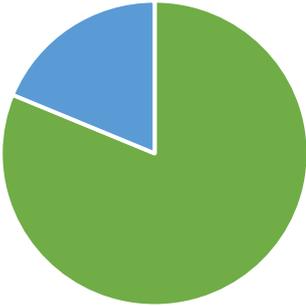
Yes 62,47% - No 38,58%



■ Yes ■ No

Would you stop thinking these past or future thoughts if you could?

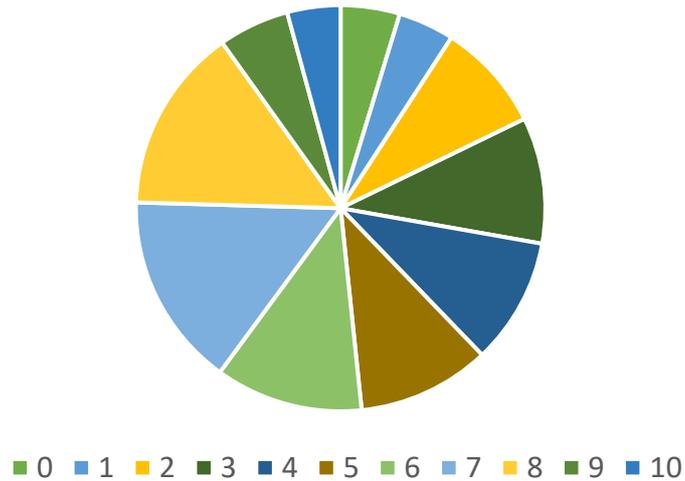
Yes 81,73% - No 18,84%



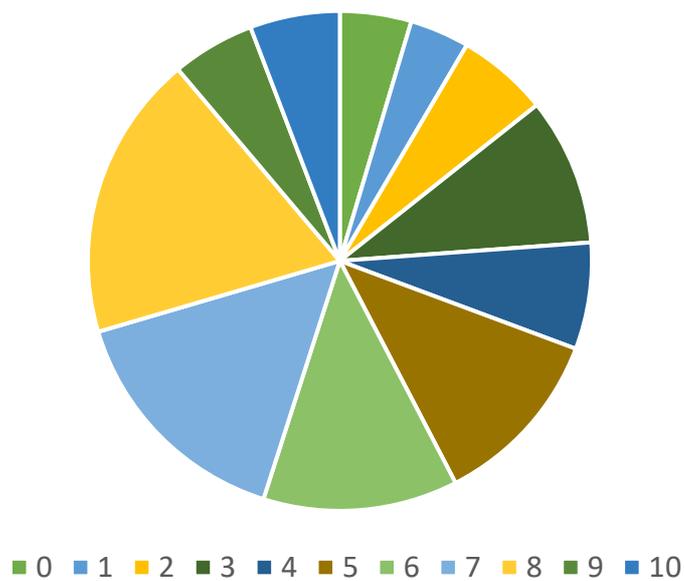
■ Yes ■ No

Gender:

Male: How much stress have you experienced on average over the last 3 months?

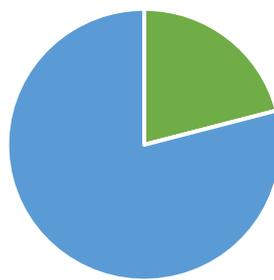


Female: How much stress have you experienced on average over the last 3 months?



Male: When experiencing stress, are your thoughts in the situation mostly about the past, or the future?

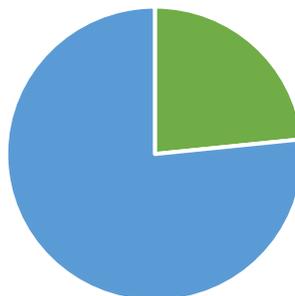
Past 20,94% - Future 79,06%



■ Past ■ Future

Female: When experiencing stress, are your thoughts in the situation mostly about the past, or the future?

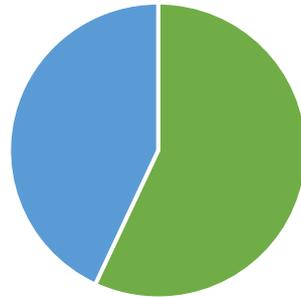
Past 23,39% - Future 76,61%



■ Past ■ Future

Male: Do you think there is value in having these past og future thoughts?

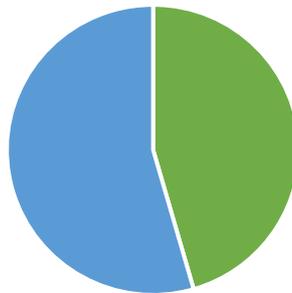
Yes 56,94% - 43,06%



■ Yes ■ No

Female: Do you think there is value in having these thoughts about the past or the future?

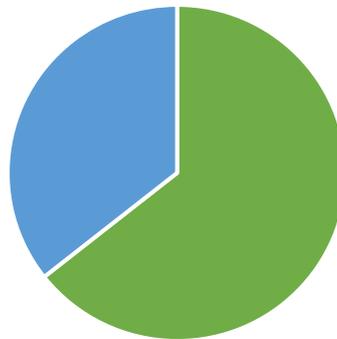
Yes 45,53% - No 54,47%



■ Yes ■ No

Male: Do you experience being able to stop your negative thoughts about the past or the future?

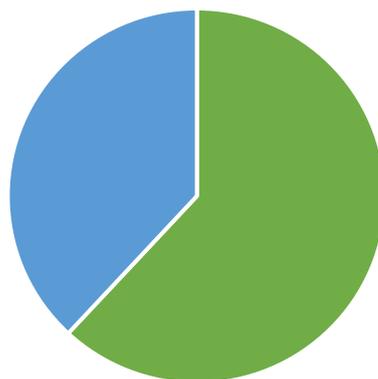
Yes 64,37% - No 35,63%



■ Yes ■ No

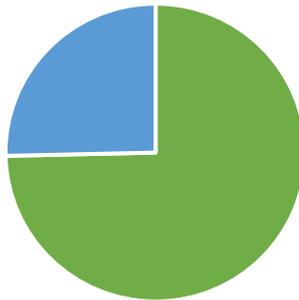
Female: Do you experience being able to stop your negative thoughts about the past or the future?

Yes 61,92% - No 38,08%



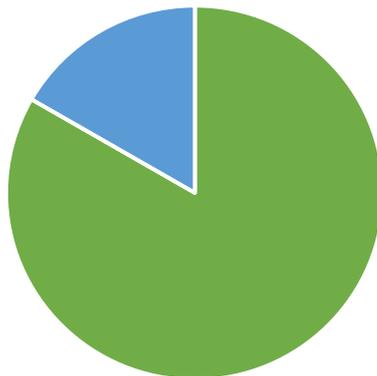
■ Yes ■ No

Men: Would you stop these past or future thoughts if you could?
Yes 74,65% - No 25,35%



■ Yes ■ No

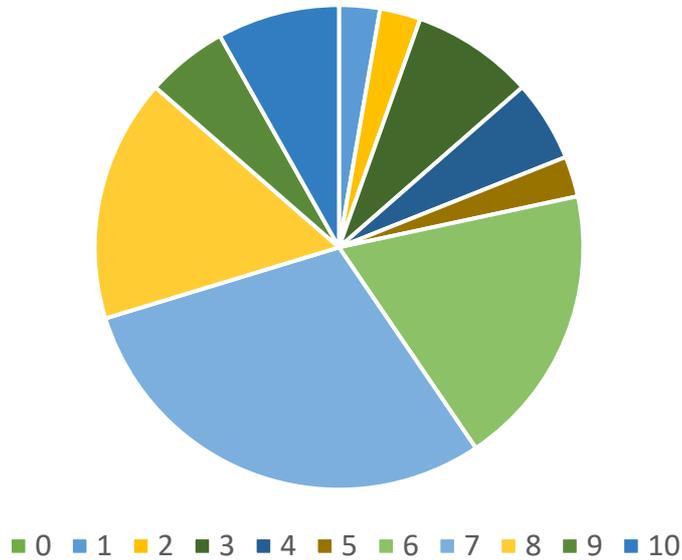
Woman: Would you stop thinking these past or future thoughts if you could?
Yes 83,33% - No 16,67%



■ Yes ■ No

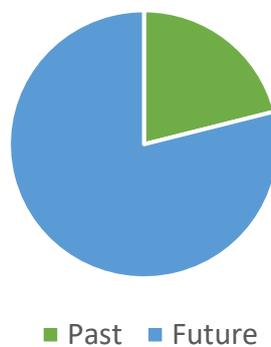
Age 0 – 19 Years:

Age 0-19: How much stress have you experienced on average over the last 3 months?



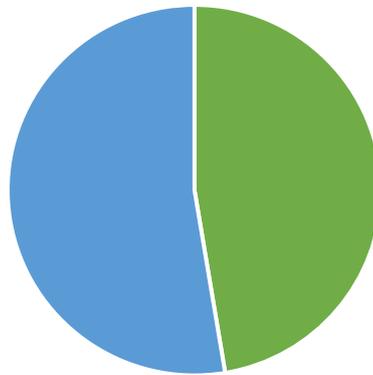
Age 0-19: When experiencing stress, are your thoughts in the situation mostly about the past, or the future?

Past 21,62% - Future 81,08%



Age 0-19: Do you think there is value in having these thoughts about the past or the future?

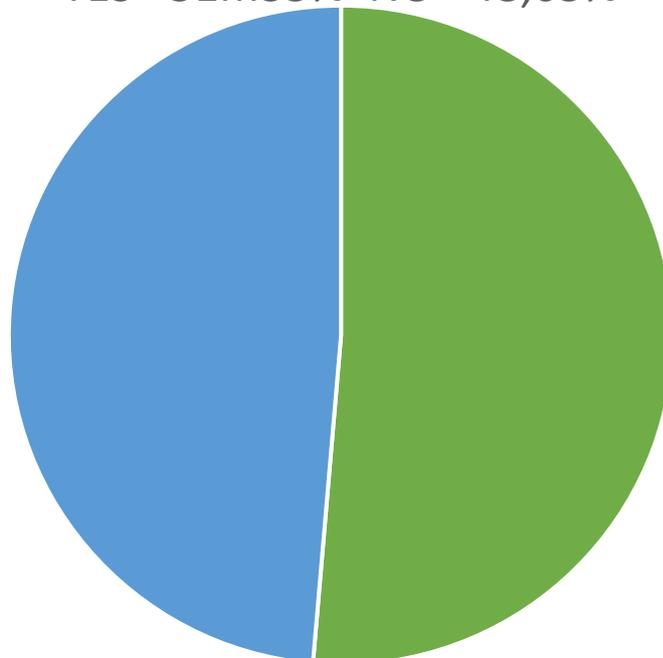
Yes 48,65% - No 54,05%



■ Yes ■ No

Age 0-19: Do you experience being able to stop your negative thoughts about the past or the future?

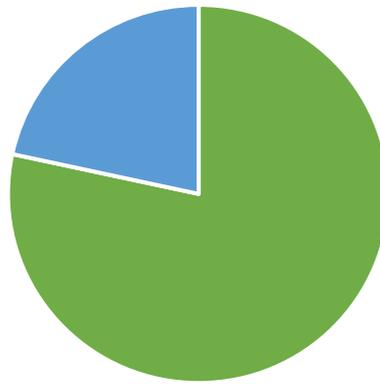
YES =51m35% NO =48,65%



■ Yes ■ No

Age 0-19: Would you stop thinking these past or future thoughts if you could?

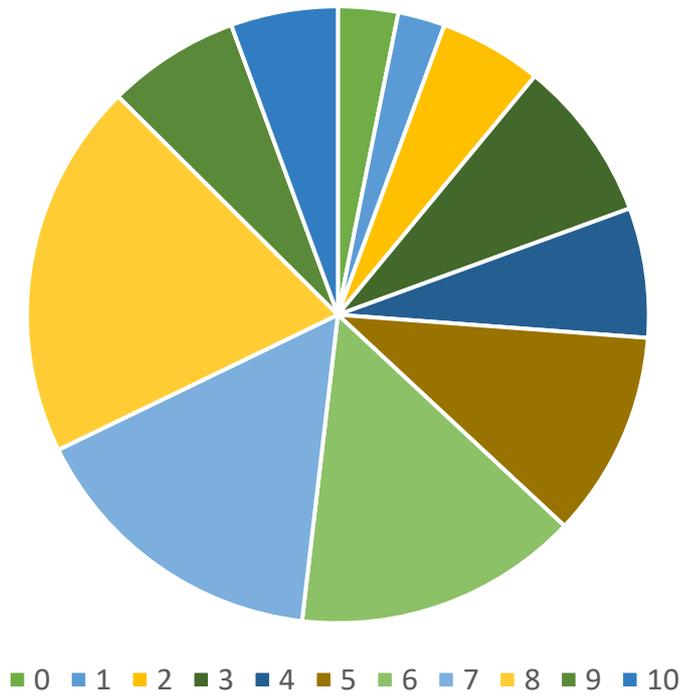
YES = 78,38% NO = 21,62%



■ Yes ■ No

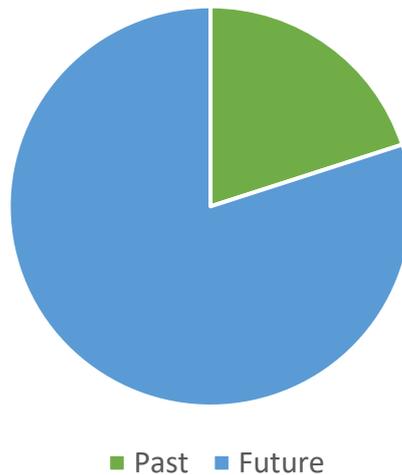
Age 31 – 45 years:

Age 31-45: How much stress have you experienced on average over the last 3 months?



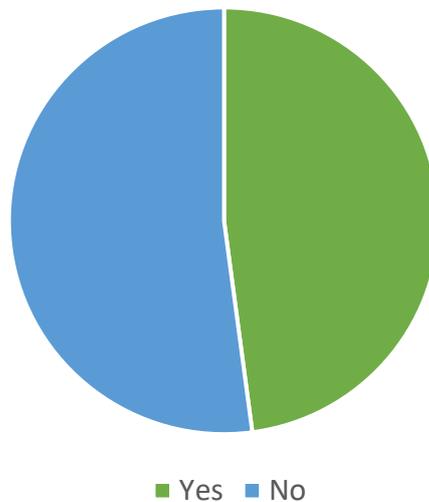
Age 31-45: When experiencing stress, are your thoughts in the situation mostly about the past, or the future?

Past 21,17% - Future 84,67%



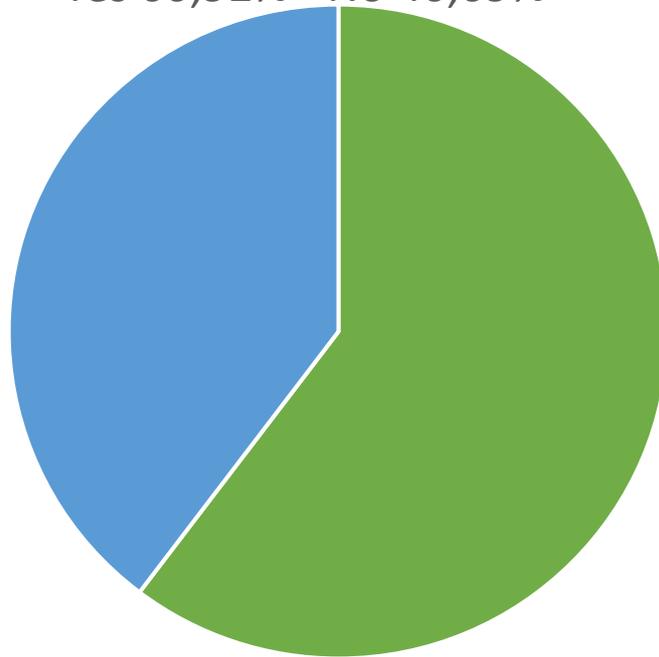
Age 31-45: Do you think there is value in having these thoughts about the past or the future?

Yes 48,49% - No 52,74%



Age 31-45: Do you experience being able to stop your negative thoughts about the past or the future?

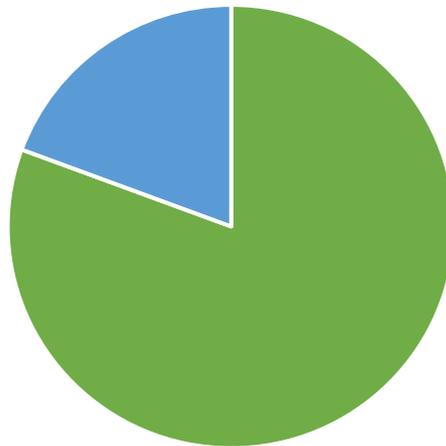
Yes 60,92% - No 40,09%



■ Yes ■ No

Age 31-45: Would you stop thinking these past or future thoughts if you could?

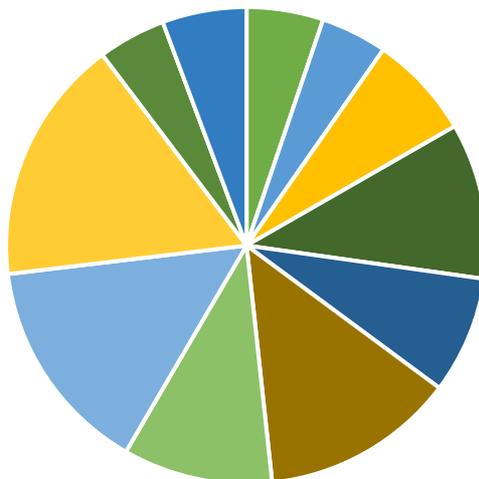
Yes 81,45% - No 19,55%



■ Yes ■ No

Age 46 – 65 years:

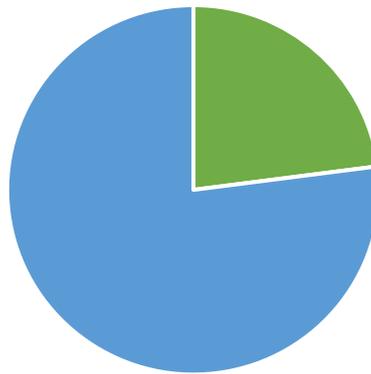
Age 46-65: How much stress have you experienced on average over the last 3 months?



■ 0 ■ 1 ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 ■ 7 ■ 8 ■ 9 ■ 10

Age 46-65: When experiencing stress, are your thoughts in the situation mostly about the past, or the future?

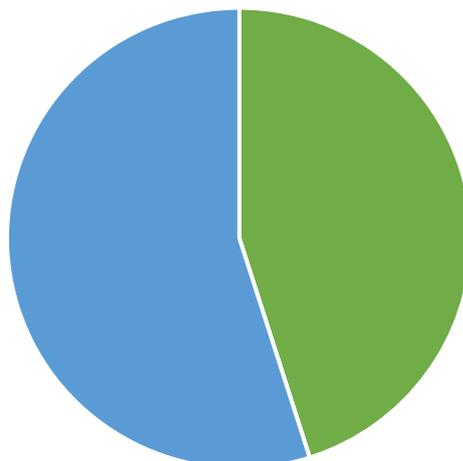
Past 23,31% - Future 78,22%



■ Past ■ Future

Age 46-65: Do you think there is value in having these thoughts about the past or the future?

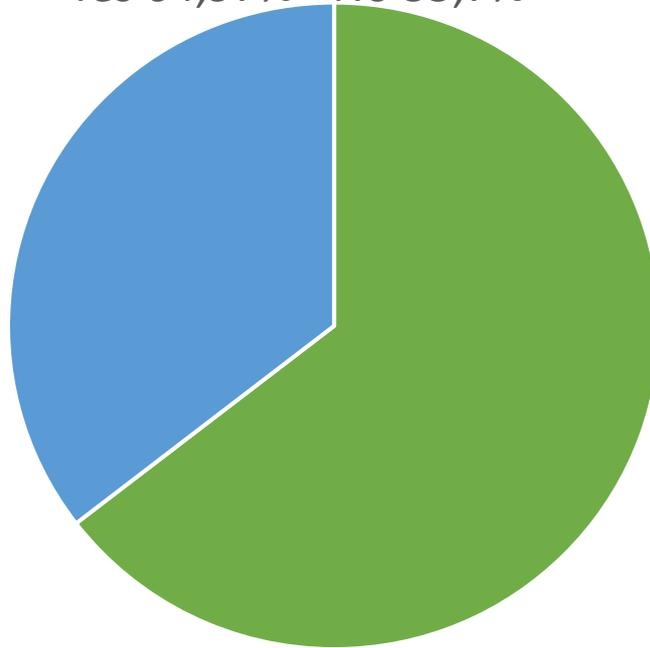
Yes 45,1% - No 54,9%



■ Yes ■ No

Age 46-65: Do you experience being able to stop your negative thoughts about the past or the future?

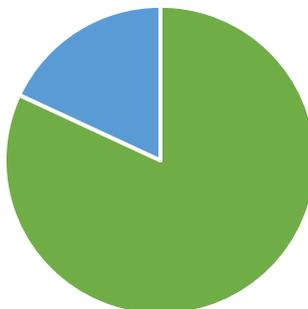
Yes 64,97% - No 35,7%



■ Yes ■ No

Age 46-65: Would you stop thinking these past or future thoughts if you could?

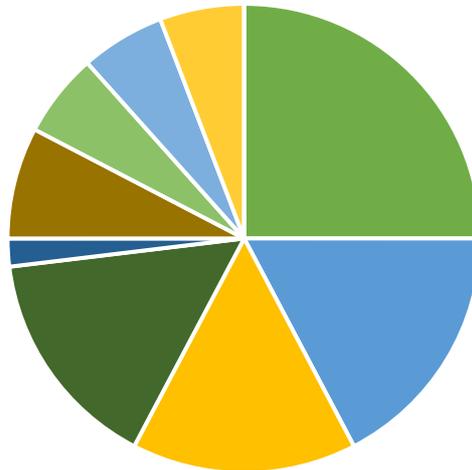
Yes 82,23% - No 18,1%



■ Yes ■ No

Age + 65 years:

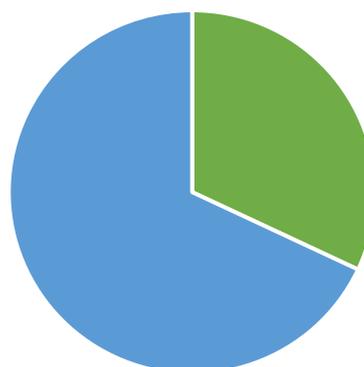
Age 65+: How much stress have you experienced on average over the last 3 months?



0 1 2 3 4 5 6 7 8 9 10

Age 65+: When experiencing stress, are your thoughts in the situation mostly about the past, or the future?

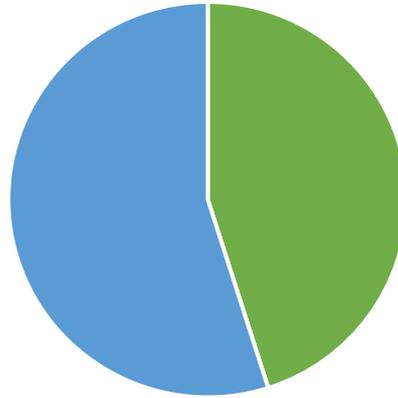
Past 32,65% - Future 69,39%



Past Future

Age 65+: Do you think there is value in having these thoughts about the past or the future?

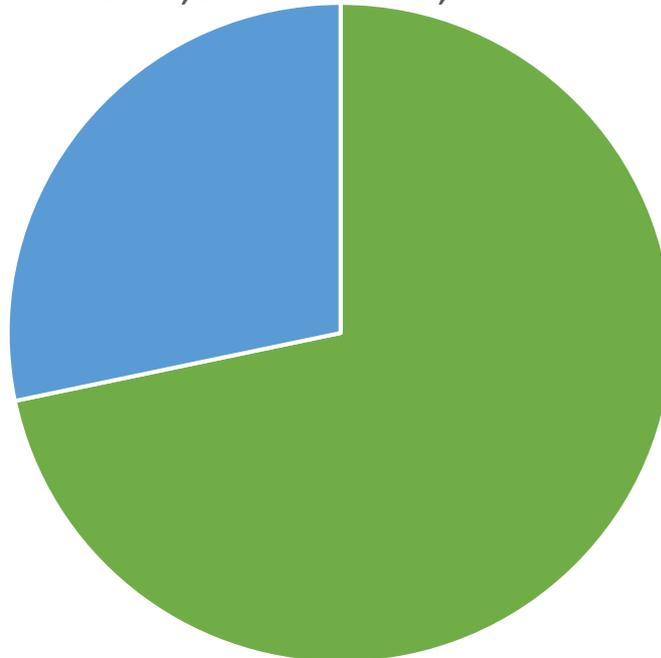
Yes 45,1% - No 54,9%



■ Yes ■ No

Age 65+: Do you experience being able to stop your negative thoughts about the past or the future?

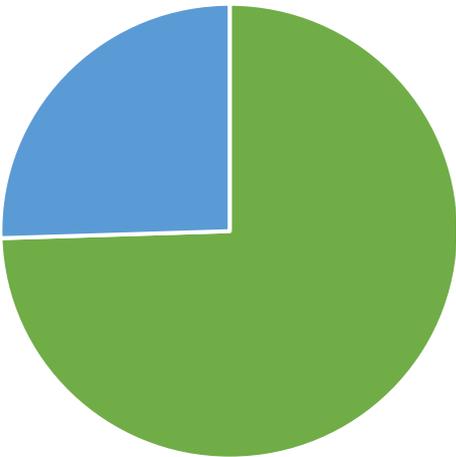
Yes 74,51% - No 29,41%



■ Yes ■ No

Age 65+: Would you stop thinking these past or future thoughts if you could?

Yes 74,51% - No 25,49%



■ Yes ■ No