

## **Ruminative thinking and psychopathology issues in the writings of Saint Maximus the Confessor: An evolutionary psychological perspective<sup>1</sup>**

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### **Abstract**

*Ruminative thinking is a reasoning process where individuals dwell on the same thought or theme for short or extended times. In psychopathological terms ruminative thinking characterizes focusing too much on negative appraisals. In evolutionary psychological terms explains the forced and intensive introspection of our ancestors to protect themselves from potential threats, so that to adapt and fulfill their needs for survival in given environments. Ruminative thinking literally means 'regurgitating past thinking' into the present by believing that what took place in the past will reiterate itself.*

*In St. Maximus' writings, the term rumination can be found under the concept of μηρυκισμός, which underlines the kind of thinking process the individual brings back in mind in order that pathological experiences - which have once influenced one's psyche - to keep troubling one's personality. In St. Maximus' psychological anthropology μηρυκισμός is not a regular term. This term is rarely found in his writings for he uses connotations to describe it, such as περιποιήσασθαι, συντηρήσθαι, ἐπιφερομένων, τυποῦσθαι, when he talks about conditions of the soul with regards to the maladaptive habit of the intellect to retain impassioned thinking. For the purpose of this paper, there will be conducted an empirical study on the themes of rumination and μηρυκισμός in evolutionary psychological terms. The instruments to be employed in this study will be two inventories:*

- 1. The "Responses Styles Questionnaire" (RSQ) (Nolen-Hoeksema, 1987).*
- 2. A self-devised questionnaire composed out of St. Maximus' references to "Questions to Thalassius" and titled "Rumination and the Wakefulness of the Mind Inventory (RWMI)"*

*The hypothesis to be tested will be as follows: The more individuals ruminate the more irrational thinking can lead to psychopathology. Though rumination is a pathological condition related mainly to depression, the aim of this hypothesis is to query on the evolutionary psychological idea that rumination plays significant role to the human mind. The tool to support evolutionary psychological explanations will be St Maximus the Confessor's psychological anthropology.*

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<sup>1</sup> This paper is part of my personal research on the writings of the Church Fathers from the interdisciplinary point of view of psychology and the Church's anthropology as to the aspects they refer to in regards to human psychology, spirituality and psychosomatic balance. The point of view that I'm taking is through psychology of religion, evolutionary psychology and cognitive-behavioural therapy. My effort is focused on the objective the writings of the Church Fathers to be presented according to a modern psychological vocabulary as to the practical elements they consist of concerning the identification of mental illnesses and what can be done about it with reference to the needs and expectations of our contemporaries.

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## Introduction

### Prolegomena to the subject

In evolutionary psychology, the aspect of rumination refers to the intense thinking about aims:

1. an individual wishes to fulfill (adaptation objectives) (Martin & Tesser, 1996)
2. intense recollection of memories an individual had suffered from (reduced fitness maximization) (Gover, 2011)
3. intense and inactive focus on unhelpful emotions an individual feels unable to deal with (psychopathology issues) (Nolen- Hoeksema, 2000)

Point of convergence in all these three evolutionary psychological explanations on rumination is a negative reinforcement strategy against decision-making efforts referring to needs haven't been satisfied due to lack of resources (Mor & Winquist, 2002).

In St. Maximus the Confessor's psychological anthropology<sup>2</sup>, rumination is understood as the reiterative attitude of thoughts bearing psychopathological content. In his question 15 to Thalassius, St. Maximus refers to rumination as *regurgitation*, whereby passions reveal their malevolent disposition and presence in the mind in terms of recurrent thinking (...ὡς ἐν μηρυκισμῷ, τῆς περὶ τὰ πάθη κακῆς διαθέσεως). In the same extract, recurrent thinking in the mind is maintained through ...τὸ καρτερικὸν καὶ φιλόπονον καὶ γεωργικὸν καὶ οἶον ἀναδοτικὸν καὶ ἐπινοητικὸν..., i.e. constancy, painstakingness, cultivation and indeed digestion and conceptual regeneration (of negative appraisals).

Recurrent thinking in St. Maximus' psychological anthropology is expressed with infinitives and past participles such as *περιποιήσασθαι, συντηρούμενον, τυποῦσθαι* (to be self-preserved; in being maintained; to be represented). Infinitives and past participles indicate that recurrent thinking is conceptually conveyed in terms of *reactions preserved through the law of passions whilst maintained as natural facts* (καὶ τὸν μὲν – νόμον τῶν παθῶν – περιποιήσασθαι ταῖς φυσικαῖς συντηρούμενον ἐνεργείαις... – in the *Our Father*, 264; comp. Siegle et al., 2003); as well as in terms of *sorrows represented in the mind* (...λυπηρῶν τυποῦσθαι τὸν νοῦν – in the *Our Father*, 258).

According to the literature, rumination in evolutionary psychology is explained as an ever-stochastic coping strategy, helping people confront problems they feel unable to find answers to (Watson & Andrews, 2002). It is argued that individuals who ruminate are able to come to terms with issues at hand even though solutions to adaptive problems haven't been selected for, such as setting up goals and be reminded of their lack of progress (Martin et al., 2004). Rumination can also be demonstrated as a social phenomenon as to the implications of the problem to other members of the society so that solutions to be endeavoured collectively (Nettle, 2004). In this paper, there will be conducted a study questioning if intense rumination can help individuals face issues of personal psychopathology. Next to the original hypothesis indicated in the abstract, there will also be hypothesised that the more individuals ruminate the more matters of psychopathology are difficult to be dealt with.

### Ruminative thinking in St. Maximus the Confessor's writings: An indicative presentation

<sup>2</sup> By terming St Maximus the Confessor's anthropology as a psychological one I mean the importance of his writings in the interpretation of the human cognition with respect to human cognitive abilities and behavioural elements deriving from it.

In starting with St. Maximus, the aspect of intellect is psyche's main power where rumination takes place. In his writings, he refers to it as the contemplative part (τὸ θεωρητικὸν μέρος)<sup>3</sup> of the psyche, which influences not only what humans think but also what they feel and do. Through the intellect, humans are able to recognize, ascertain and evaluate good from bad. In St Maximus, rumination of the mind (μηρυκισμὸς τῆς διανοίας), if it is divisible and corrupted (διαιρετικὸν τε καὶ φθαρτικὸν), then it engenders psychopathology in the mind, separating thus human nature from unification unto God. On the other hand, if one does not ruminate in the mind, then instead of τὸ κακὸν he experiences τὸ καλὸν, which operates as ἐνοποιητικὸν (uniting) between what have been divided, i.e. between the inner-psyche and the intra-psyche and vice versa, for it is συνεκτικὸν (holding together) - τὸ καλὸν - and brings faculties of the mind in unison<sup>4</sup>.

Many times in life, rumination takes place in relation to what people think that others have done or behaved against them. There are people who ruminate about others' behaviours unto themselves, though real or imagined. If such rumination becomes part of one's everyday thinking and emotional reactions, then it means that the memory of what took place can lead the individual mind to demonstrate in one's thinking what has been represented (τυποῦσθαι) in the mind with regards to what one feels that brought about sorrow to oneself (τῶν λυπηρῶν) due to the memories which reached (τῶν φθασάντων) one's mind. If such rumination persists, then one's opinion, recollection and knowledge of others becomes divided both in terms of how one positions oneself before others and his/her understanding of the role of physical appearance of things in reality, the way these are personally comprehended.

In other words, when rumination is one's everyday preoccupation, then whatever one dislikes in one's relation to others appears to be an obstacle unto one's interrelation with them, whether this takes place in terms of communication, others' behaviour, or others' preoccupation with things could associate to oneself. Rumination cannot have influence in one's mind, if forgiveness of deeds and common frame of mind are the means of communication between the individual and others: "(...) it is obvious, just like God who remains impassive in everything taking place and sets aside what – transgressors - are doing, - individuals to do the same - by not allowing – things – that reach memory to be causing sorrow in the intellect and be impressed into it, so that one's mind not to be fragmented and reproved unto one's nature - due to - separation from others, though one is human too"<sup>5</sup>.

### Ruminative thinking and the three powers of the psyche: An indicative account

Rumination in St. Maximus' writings seems also to be conceptualized and indicated by the term 'πάθη' (passions). Ruminative thinking is related to passionate thoughts (λογισμοί), meaning that recollection of negative thinking cannot exist without impassioned adherence to experiences of the past, or present<sup>6</sup>. The pathological relationship to negative thinking introduces exclusive dependence to it. The opposite can be regarded as a solution, in that one by considering the pathology of negative thinking as unfounded, one can fruitfully ignore it. In this manner, one can comprehend that the

<sup>3</sup> ...τὸ μὲν θεωρητικὸν (τῆς ψυχῆς) καλεῖσθαι νοῦν (...). PG91: 672D.

<sup>4</sup> Εἰ γὰρ φύσει τὸ καλὸν ἐστὶν ἐνοποιητικὸν τῶν διηρημένων καὶ συνεκτικὸν, τὸ κακὸν δὲ δηλονότι τῶν ἡνωμένων ἐστὶ διαιρετικὸν τε καὶ φθαρτικὸν. Thalassius 15.

<sup>5</sup> (...) δηλονότι ὡςπερ ὁ Θεὸς ἀπαθῶς ἐπὶ τοῖς συμβαίνουσι διαμένων, ἀφίησι τοῖς πλημμελήσασιν μὴ συγχωρῶν μνήμη τινα τῶν φθασάντων λυπηρῶν τυποῦσθαι τὸν νοῦν, ἵνα μὴ τέμνων τῆ γνώμη τὴν φύσιν ἐλέγχεται πρὸς τινα τῶν ἀνθρώπων διεστηκῶς, ἀνθρωπος ὢν. PG90: 901B-C.

<sup>6</sup> "Ταραττε τοὺς ἀνθρώπους οὐ τὰ πράγματα, ἀλλὰ τὰ τῶν πραγμάτων δόγματα". Epictetus' *Enchiridion*: "Men are disturbed not by things but by the speculations they construe of them". In Epictetus' writings as well as in Socrates' dialogues can be found relevant considerations which relate to the need events not to be translated as precursors of irrational thinking, unwanted emotions and/or adverse reactions, but as positive reinforcers helping individuals becoming better personalities.

understanding of thoughts and emotions in association to ruminative thinking demonstrate avoidant behaviours, the importance of which in one's everyday life is that they impede personal psychospiritual growth and development.

To this extent, St. Maximus' argument about *μηρυκισμὸς* (rumination) has to do not only with negative and persistent thinking and re-thinking, but with the faculties of the psyche as well. The so-called trichotomy (Thunberg, 1995) or tripartite (*Βαρβατσούλιας*, 2004) aspect of the psyche is claimed to be the field where rumination takes place. The three aspects of the *λογιστικόν*, or the uniqueness of the personal (*Βαρβατσούλιας*, 2004) – *τὸ λογιστικόν* (explained otherwise as *the inner principle*) -, the incentive – *τὸ θυμικόν* – and the appetitive – *τὸ ἐπιθυμητικόν* – are actually related to ruminative thinking, whether directly via the relationship between *λογιστικόν* and *θυμικόν*, or indirectly (*ἐπιθυμητικόν*) via thinking (*λογιστικόν*) and interpretation of thoughts, or the representation of them in the mind (*θυμικόν*), or the feelings and emotions (including physical sensations, such as tiredness, butterflies in the stomach, ulcers, etc. as well as grief, fear, worry, distress, anxiety, and others) might come out of them. A classical example of ruminative thinking related to the appraisals of thoughts, feelings and emotions both in the somatic and the psychological realm, can be found in St. Maximus' indicative extracts of:

“Τὴν σάρκα φησὶν διὰ τῶν φαινομένων ἡθῶν εἶναι δεκτικὴν τῆς κατ'ἀρετὴν τῆς ψυχῆς διαθέσεως, ὄργανον πρὸς ἔμφασιν αὐτῆ τῆ ψυχῆ συνεζευγμένην–It is argued that the flesh is receptive by virtue of the psyche's disposition to imagined mores, for it is a reflection and co-habited tool to the psyche” and “Τὴν αἴσθησιν λέγει παραπέμπουσαν τῷ νοῦ τὴν τῶν ὁρατῶν φαντασίαν, πρὸς κατανόησιν τῶν ἐν τοῖς οὖσιν λόγων, ὡς ὄργανον τῆς τοῦ νοῦ πρὸς τὰ νοητὰ διαβάσεως–The sense, it says, consigns the imagination of the perceptible to the mind, so their inherent *logoi* ( their preconditions of existence) to be comprehended, for it is (the sense) instrument of the mind to the understanding of the inconceivable”<sup>7</sup>.

As to the first extract, it is obvious that St. Maximus considers that whatever takes place in the psyche affects the body – in other words, psychological symptoms precipitate physical symptoms. As to the second extract, he points out that the senses – and accordingly feelings – depend on how the intellect understands them after the mind has come to realize the effect events have, or have had, in one's life, for there is no other way thinking to be sustained without feelings passing through what the mind has conceived about the *logoi* of creation. The unbreakable bond between body and psyche, corporeal and incorporeal, conceivable and inconceivable is what St. Maximus exclaims very emphatically through these two extracts. In this way, ruminative thinking cannot be maintained as being generated from the mind only, for it follows what has been perceived, considered, and imagined due to eventful experiences without which may not have primarily been existed. I say, 'primarily' not implying that rumination is absent without events, but that it can be hinted in the mind and reveal itself

<sup>7</sup> St. Maximus' understanding of the human cognition, the relationship of the faculties of the soul to the psychosomatic man and the association between the corporeal (the bodily) and the incorporeal (the psychological) parts of human nature is justified by modern psychotherapeutic approaches, such as the rational-emotive (Ellis, 2001) and the cognitive-behavioural ones (Beck, 1991), where it is argued that the human state can be affected in three ways:

1. Through one's thinking,
2. Through one's physical and emotional reactions,
3. Through one's avoidant attitudes and tendencies.

through early experiences and critical incidents, an idea that is apparent to the teaching of St. Maximus the Confessor as a whole<sup>8</sup>.

The possession of a rational, intelligible and reasonable faculty/reality (νοερά τε καὶ λογικὴ δύναμις) by the man's psyche encapsulates the need for an understanding of the mind as the precipitating factor of either rational or irrational thinking and helpful or unhelpful emotional reactions. Given that the mind is the precursor of those, then, thoughts (τὸ λογιστικὸν/ οἱ λογισμοί), emotion (τὸ θυμικόν) and what is wished and/or desired (τὸ ἐπιθυμητικόν) by oneself, is what one looks forward to keep up either in terms of positive reinforcement or negative and avoidant behaviours. To consider the relationship between ruminative thinking and the faculties of the psyche, we need to take into account that thinking and emotional reactions in St. Maximus' writings form part of the balance between the intellect, the rational part of the psyche, the appetitive and the incentive ones.

### St. Maximus the Confessor on survival and adaptation: An example from his writings

The more the tripartite aspect of the psyche is balanced and able to control ruminative thinking, the more survival and adaptation purposes are satisfied. To explain that a bit further, because it forms part of the generic understanding of the present manuscript, is to say that since one's everyday reality is bombarded by ruminative thinking causing immense distress in one's psyche, if the faculties of the soul are in a balanced order, i.e. not exaggerating either in terms of decision-making via instinctive processes, subject to the incentive part, or overreacting in terms of wishes and actions, subject to the appetitive part, but being in a 'good relationship' with the rational part of the psyche (τὸ λογιστικόν), then the question of survival and adaptation before unforeseen circumstances or motivations can be fruitfully helped without the need to avoiding situations, which can bring about psycho-pathological experiences. On the other hand, if ruminative thinking is a persistent thinking experience in one's mind, then survival and adaptation objectives cannot be satisfied. By that, it is meant that ruminative thinking becomes an experiential obstacle to the needs for a healthy mind without which no balance in the powers of the soul can be achieved, indicating thus that survival and adaptation, or selection problems, cannot be solved, something which St. Maximus underlines in the following extract:

“Τοῦτο γοῦν (τὸ ἀγαθόν), τῷ μὲν λογιστικῷ ζητοῦμεν· τῷ δὲ ἐπιθυμητικῷ, ποθοῦμεν· τῷ δὲ θυμικῷ, φυλάττομεν ἄσυλον· τῷ δ' αἰσθητικῷ, κατ' ἐπιστήμην ἀμιγῆς αὐτὸ τῶν ἐναντίων διακρίνομεν· τῷ δὲ φωνητικῷ λαλοῦντες αὐτὸ ποιοῦμεν φανερόν τοῖς ἀγνοοῦσι· καὶ τῷ γονίμῳ, πληθύνομεν αὐτὸ, μᾶλλον δὲ ἀληθῆς εἰπεῖν, ἡμεῖς καὶ αὐτὸ πληθυνόμεθα—We seek, therefore, good through the rational part; through the appetitive part we yearn for it; through the incentive part we protect it as sanctuary; through senses, we knowledgeably discern it pure from opposites; through voice we talk it out to those not knowing it; through fertility we multiply it, however more truthfully, we and that are getting multiplied together”.

This extract is very interesting for the following reasons:

1. The main theme and core of it is 'good'
2. What 'good' depends on relates to the three powers of the soul

<sup>8</sup> Numerous examples from extracts of St. Maximus' writings can be detailed here, which can positively testify that early experiences and critical incidents are factors for the establishment of ruminative thinking long before events could take place.

3. What 'good' is demonstrated by are the senses and the human voice, i.e. emotions and justification of everyday needs via reflection – longing for good does not only rely on feelings but most importantly on voicing it out so that its prominence to become demonstrative and known
4. Finally, what good survives through is becoming the fertilizer to generations to come, through which good turns out as adaptation without which societies cannot carry on

Certainly, in this extract, we don't expect some sort of 'Darwinian' perspective, on behalf of St. Maximus the Confessor, in terms of survival and adaptation. What we do discover is not how survival and adaptation can help humans solve adaptive problems, but the outcome of such solutions so that survival and adaptation to have a long-lasting effect. That effect is plausible, according to St. Maximus, only through *the fertilization of good* to future generations, which means humans survive and successfully adapt in hostile environments only if they exercise *good*, which assists societies grow and prosper with the least possible problems and/or adaptive challenges.

Through exercising *good* societies and communities do not only find solutions to adaptive problems but they can out-survive them with less possible costs. Readers may find difficult to comprehend how 'good' can be *good* for adaptation - as the precursor of it - and for survival - as generator of it - for the reason the term 'good' in English does not actually apply literally to the concept of ἀγαθόν, the way the latter appears in the writings of St. Maximus the Confessor. The explanation lies to the fact that what is meant by ἀγαθόν, includes the process of everything good taking place whether materially or spiritually.

St. Maximus interprets good as a 'natural seed' for the multiplicity of virtues in the psychosomatic man. In this way, adaptive challenges if comprehended and analyzed with reference to good elements sustaining them, such as conceptualizing the problem with regards to looking for a solution in the long term - a solution which could be both practical and fruitful -, then survival could become a manageable process during decision-making and problem solving, contrary to the cultivation of:

1. ruminative thinking as a defective agent to the experience of good, but ruminative thinking as a mediator in the comprehension of pros and cons
2. ruminative thinking as defective experience to decision-making and problem solving before adaptive challenges and survival needs, but ruminative thinking as useful reasoning herald before action implementation.

When good governs appraisals of thoughts, no rumination takes place, no procrastination comes about. When good governs one's everyday activities, then ruminative thinking becomes proactive thinking; then, ruminative thinking generates positive appraisals.

### **Ruminative thinking in evolutionary psychology**

In evolutionary psychology, ruminative thinking refers to the extensive appraisals of thoughts, which our ancestors were 'bombarded by' during the EEA (The Environment of Evolutionary Adaptedness – where the human brain is believed to have had the neocortex capacity<sup>9</sup> we have today), when they were facing adaptive challenges. Adaptive challenges during the EEA had to do with collection and accumulation of food, arms race between conspecifics, settling in communities, avoiding

<sup>9</sup> When we say 'neocortex' we refer to the brain volume of the neo-mammalians, of which solely is the humankind, which consists of 80% more the cognitive abilities – i.e. the so-called grey matter - normal mammalians have – something which is also apparent also at the weight brains have when humans are born (between 1100 to 1200 cm<sup>3</sup>). Comp. Ward (2010).

and/or handling dangers and physical disasters, protection issues, satisfaction of reproduction needs, communication issues with others, managing out resources and sharing them according to one another's needs, meeting expectations during everyday necessities, etc. (Shanahan, 2004). Ruminative thinking during the EEA operated in three functions in our ancestors' minds:

1. Trying to making right decisions and finding appropriate solutions to problems (Zeelenberg et al., 2008)
2. Experiencing defeat when efforts to solving problems did not come easily, or did not come at all (Lyubomirsky et al., 1999)
3. Delving into intrusive and dysfunctional thoughts, emotions and behaviours of avoidance when problems were difficult to be decoded (Muramatsu & Hanoch, 2005; Magee et al., 2012)

Another aspect to be discussed below that relates to ruminative thinking is the challenge of adaptive problems to human behaviour in terms of fitness issues<sup>10</sup>. Though fitness as an evolutionary term refers to successful reproduction rates (DeLamater & Hyde, 1998), it does also include aspects of beneficial, and/or costly gains in terms of societal relationships (West et al. 2007). In view to understanding the latter, we need to point out that beneficial and/or costly gains explain the concept of fitness in association to over-thinking processes by virtue of hostile environments (Titus, 2002). The reference to 'hostile environments' is used not necessarily in the context of dangerous, or life-threatening situations and/or events, but also in the context of unforeseen circumstances or psychological reactions before incidents and events to have even been taken in account or pre-conceived by the human mind (Daly & Wilson, 1999). The role of ruminative thinking, or 'over-thinking' as previously stated, does give justice to fitness issues both in the realm of personal survival and survival in association to others and in the realm of competitive strategies, which one way or another always come to the surface of human interrelationships (Bandura, 1999).

In this way, fitness, becomes an issue which if not solved can lead individuals to further ruminative thinking, the consequences of which appear via psychopathological experiences (Gilbert, 2006). For ruminative thinking to turn out a helpful process through fitness needs is to be exercised via reciprocal behaviour between conspecifics so that members of society unable to care for their fitness needs to be cared for from other members. In this way, ruminative thinking does not become an issue and an obstacle, but a problem the solution to which can be selected for through others' assistance to those incapable to look after themselves, not only materially, but most importantly, psychologically as well (Kanter et al. 2006).

### **Ruminative thinking and evolutionary psychological explanations on human psychopathology**

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<sup>10</sup> Fitness issues bring to mind the motto 'survival of the fittest' by Herbert Spencer (1864-1867) meaning that favourable races can more successfully survive compared not only to others, but also at the expense of them. However, what Spencer had not actually considered was that through such an understanding those who are fitter and survive better may also – and they can, if we look back to our evolutionary history - offer a helping hand to individuals who are in the need for such help from others. Such understanding, as to the 'survival of the fittest' issue, has also been discussed by the Russian anarchist Peter Kropotkin (1842-1921) who thought of that motto as an explanation to co-operative strategies between conspecifics. For Kropotkin, co-operation and not competition is what the above motto is all about, for what fitness to his understanding indicates is not individuals competing to one another, but what communities can succeed together when their members co-operate to each other. According to his writing *Mutual Aid: A Factor of Evolution* (1902, Kropotkin argues that fitness is an understanding of self-assertiveness in terms of mutual support and not mutual struggle. Through fitness, individuals are mutually aided to create ethical conceptions for a society more assistive and less selfish.

Ruminative thinking mainly refers to melancholic major depression. The presence of rumination appears to be an important factor for the symptomatology of melancholia, such as anhedonia, low mood, decreased self-esteem, guilt, agitation, difficulty waking up in the morning, etc., (DSM-IV-TR) the terminology of which facilitates the study of psychobiology of the condition in scientific psychology (Nelson & Mazure, 1985).

Nowadays, melancholia and depression are used interchangeably when are explained in terms of their relationship to evolutionary starting-points, something that appears obvious if we look at the negative outcomes deriving from both: social anxiety, post-traumatic stress disorder, avoidance patterns in engaging to constructive solutions that refer to helping the individual out of its depressive condition, worry and fear, difficulty to facing up everyday reality, imbalanced relations to others, submissiveness issues, failure during competition contests with conspecifics, etc. Melancholia, therefore, is another expression of depressive symptomatology, the commencement of which precipitates, or depends on ruminative thinking.

Rumination is an important feature of the depressive condition where individuals use stochastic and analytical thinking (analytical thinking, rumination, and depression in terms of survival, adaptation and access to resources) to deal with emotionally-laden everyday experiences that require careful consideration – such as dealing with conspecifics, and looking for solutions before adaptive problems (Nolen-Hoeksema, 1990). According to the analytical rumination hypothesis (Andrews & Thomson, 2009), ruminative thinking refers to depressive rumination for it explains why:

1. individuals by attempting to solve complex adaptive problems they resort to an analytical/stochastic way of information-processing that triggers depressive episodes
2. fitness-related goals, e.g. looking for resources to satisfy depressive experiences and ruminative thinking to recursively contemplate about this, are reached in association to an analysis of their constituent parts
3. triggering problems need analysis as evolved functions – in terms of looking for plausible solutions and the adaptability of them
4. analytical thinking is a resource-limited trigger/factor - in that it delays decision-making - as to the effectiveness of solutions suggested

The analytical rumination hypothesis suggests that depression and rumination/ruminative thinking are evolutionarily related aspects, for:

1. they bring about bodily and psychological changes of a neurological (decrease of serotonin and dopamine levels<sup>11</sup>) and emotional character (cyclothymic behaviour, low mood, mood swings) to the chase for sustainable solutions to adaptive problems
2. they generate resourceful thinking – in terms of how accurately to adapt to new challenges
3. triggering problems can be analytically approached through a number of different trade-offs – in terms of what the gains or losses might be - so fitness goals to be met

Psychopathological reactions depend on stress-response mechanisms that employ the evolved function of ruminative thinking in order that alleviation needs to be satisfied (Sloman et al., 2003). Depressive individuals, for instance, employ rumination as a bystander to this affective condition in order to balancing experiences fluctuating/deriving from it (Watkins & Moulds, 2005). Mental disorders are presented with concentration difficulties/adaptability challenges-inability to adapt, as well as with intense ruminations – staying in the problem instead of looking for ways to overcome it

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<sup>11</sup> It is evidence-based that neurotransmitters such as *serotonin* and *dopamine* affect depressive and schizophrenic behaviour respectively. The lower the serotonin levels, the higher the chances one has to develop depressive behaviour; the higher the dopamine levels the higher the chances one has to develop schizophrenic behaviour. Comp. Ward (2010).

(Kashdan & Roberts, 2007). Depression – again - is an affective disorder that brings about performance decrement in many cognitive domains (Austin et al., 2000), whereas also decreases performance on cognitive tasks – perceptual tasks -, or setting up targets as what to do next (Ambady & Gray, 2002). Disruption of depressive rumination – the understanding of depression in terms of ruminative thinking - has been found to decrease depressive symptoms (Morrow & Nolen-Hoeksema, 1990). Nevertheless, systematic disruption of rumination has been found to be associated with relapses of depressive episodes in the long term (Hayes et al., 2005). Psychopathological states are believed to have evolved by natural selection in order that adaptive challenges to be managed (Wolpert, 2008). Neurological findings about depression, for instance, coming from high and/or low serotonergic activity, explain ruminative thinking in terms of cognitive fluctuations in order adaptive problems to be efficiently handled (Koetsier et al., 2002).

*Survival → depression: a consistent competition against conspecifics to mastering resources → adaptation → rumination*

The evolutionary relationship between ruminative thinking and depression levels is an important chapter in evolutionary psychology. By depression levels are meant intensity fluctuations between environmental challenges and the need individuals to adapt to such challenges (Fletcher et al., 1998). High ruminative thinking promotes increased depressive activity, whereas low ruminative thinking decreases depressive symptoms (Morgan & Jorm, 2008). Depression levels, such as mood fluctuations, anhedonia, or distress, refer to negative cognitive styles that are subject to continuous ruminative thinking (Nolen-Hoeksema et al., 2008). Ruminative thinking can be regarded as the functional element of depressive rumination for fitness-goals have not been attained/or haven't been maximised in terms of fulfilling survival needs (Martin & Tesser, 1996). In such a sense, ruminative thinking relates to high expectations one may have towards attaining one's goals, which if not succeed, can lead to experiences of psychopathological states (Moberly & Watkins, 2010).

Psychopathological states are triggered by complex conceptual cognitive processes so that complex adaptive problems to be solved (Santor, 2003). Ruminative thinking is an adaptive process before complex environmental needs. Examples include communication needs, yielding signaling before competitive challenges, promoting disengagement when commitment to a goal seems unreachable, or attempting to keep hold of resources in forms of effective investment (Nesse, 2000). The more psychopathological symptoms are increased the more the ruminative thinking; the less the ruminative thinking, the less the psychopathological symptoms and episodes (Nolan et al., 1998). To use an example again from depression, it is an experience of self-enclosure. It introduces cognitive changes of ruminative thinking content, such as contemplating the pros and cons coming out of socialization needs, or stochastically examining problem-solving strategies before circumstantial situations, i.e. looking for possible trade-offs so that adaptive problems to be solved (Watson & Andrews, 2002).

*Psychopathology → rumination leading to intense thinking → adaptation - survival & access to resources*

The more ruminative thinking enhances ways of dealing with costly situations, the more psychopathological episodes are kept at bay; the more ruminative thinking becomes a burden for an individual to deal with a challenge, such as finding difficult to consider about possible solutions to an adaptive problem, the more the increment of psychopathological episodes (Joormann et al., 2006). States of psychopathology seem to be evolved psychological adaptations, which promote the recruitment of cognitive resources in the form of ruminative thinking so viable solutions to be sought

and implemented (Andrews & Thomson, 2009). That means that problems coupled with difficulties, as to the search for imminent solutions, require analytic thought in order that effective cognitive processes to be elaborated (Anderson et al., 2003).

*Adaptive problems → difficult to be solved → ruminative thinking → psychopathological episodes → inability to deal with → more ruminative thinking*

Depression is a performance decrement coming out of the struggle for survival, i.e. if needs cannot be satisfied depressives choose self-enclosure and ruminate (Keedwell, 2008). In such an understanding, analytic thinking presents depressive rumination as a cognitive-web of carefully examined alternatives (Papageorgiou & Wells, 2004). The latter explains investment on fitness-goals in need to be reached, whereas the former, ruminative thinking as an evolved function for the adaptive importance of the depressive condition (Gilbert, 1998). Furthermore, ruminative thinking by being related to depression levels can be evolutionarily explained as a self-concentration adaptive response that promotes knowledge about the self as to the search for functional alternatives against negative thinking and feelings (Watkins & Teasdale, 2004). Contrary to that, ruminative thinking may be explained as maladaptive to the depressive condition if fitness-goals are difficult to be met or pursued. An example to ruminative thinking as a cognitive maladaptive response could be fatigue experiences and mood fluctuations, which present depressive episodes as the outcome of performance decrement due to circumstances difficult to be managed (Lyubomirsky et al., 1999; Kanter et al., 2008).

In summary, the evolutionary relationship between psychopathology states and ruminative thinking can be twofold:

1. Ruminative thinking has been evolved to be a natural consequence towards employing fast-track defensive algorithms that are sensitive to fitness-threatening goals. Psychopathological episodes depend on ruminative thinking, for they present individuals to be focusing to themselves where performance decrement proves to be the case when costly cognitive tasks are undertaken – (a) in terms of resources to be used and how ‘expendable’ they might be; (b) solutions to adaptive problems which are less beneficial, or difficult to be appropriately tackled (Beck et al., 1979; Gilbert, 1998)
2. Psychopathological behaviour is explained as an adaptively evolved response mechanism of dealing with life stressors, whilst ruminative thinking as an evolved mental process towards an effective management of relevant mental conditions – the more the thinking about solutions to a problem, the more choices of possible solutions could come around, as well as the more the ruminative thinking the more adherence to psychopathology states could become evident (Gilbert, 1998; Just & Alloy, 1997)

### **Rationale and hypothesis to the present study**

In the present paper, what is presented and discussed is the relationship between ruminative thinking and psychopathology. A special mention has been offered to the relationship between rumination and depression. It is evidence-based that ruminative thinking affects psychopathological experiences through the realm of thoughts and emotions. The hypothesis to be tested will be “*The more individuals ruminate the more irrational thinking can lead to psychopathology*”.

### **Method**

- **Participants**

Altogether, 40 participants have taken place in this study. Respondents recruited were Greek-Orthodox regular Churchgoers. 17 were males and 23 females. Mean age was 45.3 and standard deviation (SD) 13 (12.7).

#### - Design

A within-participant correlational study will be employed in the present study. The dependent variable will be the scores participants will perform on both inventories (explained below).

#### - Measures

1. The “Response Styles Questionnaire” (RSQ) (Nolen-Hoeksema, 1987) consisted of 71 items.
2. A self-devised questionnaire composed of St. Maximus references to ruminative thinking, entitled “Rumination and the Wakefulness of the Mind Inventory” (RWMI) and consisted of 10 items (Appendix B). That inventory was created from statement examples provided by St Maximus the Confessor in his work *To Thalassius*.

#### - Procedure

For the purpose of the present study, the *Response Styles Questionnaire* from 71 items was reduced to 10 items for the reason rumination statements to conform to respective statements of the *Rumination and the Wakefulness of the Mind Inventory*. The reason for such reduction lies with the assumption both questionnaires to be equally referred to the subject the present study deals with. Scholarly, reduction of statements of given questionnaires is acceptable when studies have to do with correlation between variables (comp. Onwuegbuzie & Teddlie, 2003). The 10 items, which were kept from the RSQ had the following order: 4, 8, 12, 15, 19, 25, 36, 44, 51, 26 (Appendix A).

For counterbalancing reasons, participants were administered both questionnaires and half number of them answered the first and then the second of the inventories, whereas half of them answered the second and then the first of the inventories. Participants were asked to rate the items according to the Likert Scale scoring system of -3 to 3. Participants were explained the purpose of the study; that confidentiality and anonymity will be kept throughout the study; they were notified that there are no right or wrong answers and that should they wish to withdraw from the study they could do so without explaining the reasons to the experimenter. Data collected from respondents were inserted into the SPSS and after generation of results all questionnaires were destroyed.

## Results

**Table 1**

*Males and Females means and standard deviations*

	Mean	SD	Minimum age	Maximum age
Gender	1.58	.50	19	82
Age	45.3	12.7		

N=40

**Table 2***Correlations between males and females positive and negative rumination*<sup>12</sup>

<b>Males</b>	<b>MPR</b> <b>(Pearson's <i>r</i>)</b>	<b><i>p</i></b>	<b>MNR</b> <b>(Pearson's <i>r</i>)</b>	<b><i>p</i></b>
<b><i>n</i>=17</b>	.123	.638*	.036	.890*
<b>Females</b>	<b>FPR</b> <b>(Pearson's <i>r</i>)</b>	<b><i>p</i></b>	<b>FNR</b> <b>(Pearson's <i>r</i>)</b>	<b><i>p</i></b>
<b><i>n</i>=23</b>	.456	.066*	-.495	.043*

\* = Significant at 0.05 level (2-tailed)

1. The correlation between men and positive rumination is not significant at 0.6 ( $p > 0.05$ ). The significance level is more than 0.5. In relation to the sample used in this study, there is a probability ( $p$ ) that if the same study is conducted 24 times only 1 in those 24 studies a relationship between men and positive rumination would be significant<sup>13</sup>. In this correlation we have a Type II Error<sup>14</sup>, which indicates that the relationship between men and positive rumination arose by chance (60%). However, by knowing from literature that positive rumination is a helpful process for individuals (Gruber et al., 2009; Ciarocco et al., 2010) it means that the research hypothesis that *men ruminate positively* has been rejected for it is in fact true. In presenting inferential statistics properly, we therefore have  $r = .12$ ,  $p = .63$
2. The correlation between men and negative rumination is also not significant at 0.8 ( $p > 0.05$ ). The significance level is more than 0.5. In relation to the sample used in this study, there is a probability ( $p$ ) that if the same study is conducted 32 times only 1 in those 32 studies a relationship between men and negative rumination would be found significant. In this correlation we have again a Type II Error, which indicates that the relationship between men and positive rumination arose by chance (80%). However, by knowing from literature that negative rumination isn't a helpful process for individuals (Roberts et al., 1998; Martell et al., 2001) it means that the research hypothesis that *men ruminate negatively* has been rejected for it is in fact true. In presenting inferential statistics properly we therefore have  $r = .36$ ,  $p = .89$
3. The correlation between women and positive rumination is significant at 0.06 ( $p > 0.05$ )<sup>15</sup>. The significance level is more than 0.05. In relation to the sample used in this study, there is a probability ( $p$ ) that 6% there will not be found a significant correlation between women and positive rumination, i.e. 94% the correlation will be significant. The former means that there is a 6% chance of finding a difference as the one observed in this study; the latter that there is

<sup>12</sup> MPR stands for 'males' positive rumination'; MNR stands for 'males' negative rumination'; FPR stands for 'females' positive rumination'; FNP stands for 'females negative rumination'.

<sup>13</sup> The issue of probability at  $< 0.5$  (0.05) is in the social sciences only for 'appearances sake'. What I mean by this is the presentation and report of results, which *may have* a statistical significance as to the hypothesis being tested. A rough estimate that is kept in peer-reviewed journals is that 1 in 20 times the hypothesis tested will not be supported. The important thing, though, is that the 0.5 level is just indicative that the same participants will support the same hypothesis if at some point in future they will be asked to perform again (comp. Loftus, 1991; 1996; Dancy & Reidy, 2004).

<sup>14</sup> A very good statistics book, though an old one, about Type I & Type II Errors is by Neyman & Pearson (1967).

<sup>15</sup> Since there is not much of a difference between 0.06 and 0.05 levels – only 1% - we conclude the correlation as significant.

94% chance the relationship observed between women and positive rumination to appear smaller. In presenting inferential statistics properly, we therefore have  $r = .45, p = .06$

4. The correlation between women and negative rumination is significant at 0.04 ( $p < 0.05$ ). The significance level is less than 0.05. In relation to the sample used in this study, there is a probability ( $p$ ) that 4% there will not be found a significant correlation between women and negative rumination, i.e. 96% the correlation will be significant. The former means that there is a 4% chance of finding a difference as the one observed in this study; the latter that there is 96% chance the relationship observed between women and positive rumination to appear smaller. In presenting inferential statistics properly, we therefore have  $r = -.49, p = .04$

**Table 3**

*Correlations between males and females to positive and negative rumination*

<b>Males &amp; Females</b>	<b>Pearson's <math>r</math></b>	<b><math>p</math></b>
<b>MPR &amp; MNR</b>	-.389	.122**
<b>FPR &amp; FNR</b>	-.690	.001*

\* = Significant at 0.01 level

\*\* = Significant at 0.05 level

1. Males and females correlations to positive rumination in this sample are not significant at .12 ( $p > 0.05$ ). Type II error is again the case for both males and females and their relationship to positive correlation: i.e. the research hypothesis that *men and women ruminate positively* has been rejected for it is in fact true. In presenting inferential results appropriately, we have  $r = -.38, p = .12$
2. Males and females correlations to negative rumination are significant at .01 ( $p = 0.01$ ). That means that 1% there will not be found a significant correlation between men and women and negative rumination, i.e. 99% the correlation will be significant. The former means that there is a 1% chance of finding a difference as the one observed in this study; the latter that there is 99% chance the relationship observed between men and women to negative rumination to appear smaller. In presenting inferential statistics properly, we therefore have  $r = -.69, p = .01$

## Discussion

### Overview of findings

The hypothesis of the present study is being supported in the light of a significant association that was found between ruminative thinking and psychopathology. In detail, the present hypothesis is supported both in terms of positive and negative rumination – individuals do ruminate positively in life – and the way that ruminative thinking appears applicable both to men and women. What I indicate by that is that positive and negative rumination is an everyday reality for both genders, which has also been shown both by the Type II Error.

### Gender differences in ruminative thinking

Chances for positive and negative rumination in men seem to differentiate in percentage (60% & 80%). Chances for positive and negative rumination in women seem to be equally similar (94 and

96%). Gender differences between males and females in positive and negative rumination though it shows a variability of 25% - 70% for men (adding 60% and 80% and dividing by 2) and 95% for women (adding 96% and 94% and dividing by 2) -, it could also imply that such variability could be subject to others factors the present study hasn't taken into account. Such factors could refer to age differences between males and females – age range of the present sample was between 19 (female) and 82 (male). Such variability can indicate not only individual differences in the sense of differential comprehension of ruminative thinking, i.e. issues which for a 19 years old male or female may look distressing and 'worth' to be negatively ruminating about, for someone who is 82 years of age may look of no importance, therefore no need to negatively ruminate about. The same may take place vice versa, which means that ruminative thinking depends on the context and social framework different ages of people see themselves in. However, what is demonstrated from the findings of the present study is that women ruminate negatively at a greater percentage compared to men, something that is consistent with relevant literature as well (Nolen-Hoeksema et al., 1993; Butler & Nolen-Hoeksema, 1994).

### **Positive and negative ruminative thinking in evolutionary psychology**

Both males and females performed scores that indicate positive and negative ruminative thinking as having an impact in one's life irrespective of one's gender (Ingram, 1990; Nolen-Hoeksema et al., 1993; Nolen-Hoeksema & Jackson, 2001). This is an understanding which gives justice to evolutionary explanations about ruminative thinking, interpreting it as part of the adaptive process individuals struggle to in order that to find solutions to adaptive challenges and survive. That means that whether someone thinks positively and/or negatively about what happened in one's life, can be examined as constructive for not only provides hope and strength for one to carry on but may also make one thinking what went wrong, so planning in future to be more effective in relation to problem-solving. Ruminative thinking can also be regarded as a coping strategy seeking for help from conspecifics when individuals in question find difficult to search for solutions to adaptive problems by themselves (Stanton, et al., 1994).

In evolutionary psychology, ruminative thinking, whether positive or negative, assists individuals into dealing with adaptive problems (Kyriacou, 2011). Though rumination is a cognitive experience that does not help individuals' progress in life directly, it nevertheless is regarded as a period of cognitive preparation towards looking for solution to adaptive challenges in the long-term. By 'long-term' is meant that ruminators adapt selective solutions to problems more easily compared to those who consider they have the knowledge to look for a solution immediately (Papageorgiou & Wells, 2001). In this understanding, ruminative thinking in evolutionary psychology is argued to be a decision-making process towards not only problem solving, but anticipation as well of possible hindrances might be found in the way. In a number of empirical studies, findings show a positive relationship between individual lifestyle and rumination when that is examined in terms of the importance individuals consider about the usage of reasoning appraisals before deciding or activating themselves with regards to needs they have to fulfill (Beck et al., 1979). What has also been found – through relevant empirical studies – is that absence of ruminative thinking may lead to impaired mental health for the reason that individuals do not employ excessive reasoning to identifying solutions to problems they suffer from (Karwoski, 2006; Ilardi et al., 2007).

Next to that, it is certainly not abolished the fact that although rumination relates to our evolutionary past, it does also cause distress, the outcomes of which may result to disordered by-products, such as depression, compulsive tendencies, emotional reasoning (reasoning about something the presence of which is inexistent; 'thinking about thinking'), or post-traumatic experiences of anxiety (PTSD), which can keep an individual suffering in the long-term (Heath, 2008). Through the findings

of the present study, I conclude that the core element of ruminative thinking for evolutionary psychology is being supported. That is to say that, respondents performed in both inventories in a way that justifies that our ancestors were excessively using ruminative thinking before direct or indirect dangers. This is the case, for our evolutionary past relates to solutions have been followed through which human species keeps surviving in the history of the world. If ruminative thinking had been problematic, then it wouldn't have been selected for to support solutions against adaptive challenges (comp. La Cerra & Bingham, 1998). Such findings show also that difficulties people encounter in known or unknown environments - whether that has to do with surroundings or conspecifics - trigger ruminative thinking, in order that those being affected - or considering they need to be protected - to bargain on solutions, even though these may be unhelpful in the short-term (comp. Confer et al., 2010).

### **Ruminative thinking and its relation to psychopathology**

Though evolutionary psychology regards rumination as adaptation, it nevertheless considers it also as part of human psychopathology in terms of failure, or less success, which individuals feel helpless to bear (Webster, 1995). The factors, which associate rumination to psychopathology, are thinking and feelings. Though the discussion about thinking and feelings has not been the main focus of the present study, it is nevertheless an ongoing one, as far as psychological theories and practices are involved both in the realm of disorder identification and the interventions to be suggested towards a fruitful management of one's state and condition (Smallwood et al., 2005). It is very important also to argue that psychopathology can either be a direct or indirect result of ruminative thinking. In terms of a direct result, it explains ruminative thinking as a cognitive outcome to experiences that took place in one's life. In terms of an indirect outcome, it explains ruminative thinking as a process which precipitated psychopathological states, irrespective of the elements that created it, such as a hostile environment, conflicting interactions with others, personal difficulties which might refer to oneself and/or to one's relationship to others (Barnhofer & Chittka, 2010).

Success and failure are also elements, which may bring about positive and/or negative rumination. Individuals tend to ruminate if salient or non-salient others consider them as important or unimportant in life (Koole et al., 1999). Rumination may well therefore refer to issues of cooperation and competition. Issues of cooperation and competition do not need to be significant ones. Their significance depends on the degree of cooperation and competition when these are exercised by salient others, i.e. by individuals who hold a relationship to those they cooperate with or compete against. Cooperation between salient individuals and salient or non-salient others may turn out helpful, i.e. successful, or problematic, i.e. a failed one. The same can be regarded in terms of competitive relationships between salient and salient or non-salient others (Greenberg, 1995). Competitive relationships may either be successful or failed ones and the reasons why may also vary. Ruminative thinking can be a case for cooperative and competitive relationships in the light of communication and interaction. Individuals who ruminate after a cooperative and/or competitive relationship has failed *show a decreased level of self-esteem*, which influences not only how they see themselves but how they think others see them too (Collins & Bell, 1997).

In this study, participants rated both inventories in a way that explains that thinking affects emotions and vice versa. Since all statements in these inventories had to do with how respondents understand thinking and its influence in people's lives, scores that were provided for referred to that understanding. Individuals' understanding of thinking and how that affects personal cognition had showed that cognitive and emotional elements, if problematic, bring about avoidant behaviours, which, in addition to what people have been through, continue to dramatically affect their whereabouts and dealings with life. Ruminative thinking considerably influences and precipitates psychopathological experiences. Most notably, ruminative thinking engenders distress, low mood, obsessions (checking,

washing and repetition of similar acts) which can lead to all kinds of anxiety disorder, depression and compulsive tendencies. An explanation to such sort of psychopathological experiences could be the aspect of intrusiveness taking place via cognitive preoccupations of a compulsive context. Through this study has been found that issues of psychopathology, which bother individuals everyday can remain inevitably present, if those concerned continue to entangle themselves in a vicious circle of negative maintenance of them (Heeren & Philippot, 2011).

### **St. Maximus the Confessor's psychological understanding of ruminative thinking in line to the findings of the present study**

In St. Maximus the Confessor's psychological anthropology the elements of negative cognition and unhelpful emotional reactions are more than evident. In his writings, what he does most is to delve into the very depths of the human psychosomatic reality, either in the form of questions and answers – as in his Thalassius' work, the second inventory comes from – or in the form of lengthy discussions he holds about theological and anthropological matters. What this study has also argued is St. Maximus' consideration of human nature in terms of intrusive thoughts the way these are presented through rumination (μηρυκισμὸς). Rumination is a decisive thinking process, which whether in terms of repetition or exaggeration influences individuals' understanding of events, especially when these have a negative outcome.

Ruminative thinking in St. Maximus is an important cognitive process. It is like:

“The calf<sup>16</sup> that is molten (indicating) the mingling and mixing up of the natural powers (of the soul) with one another. Also, (such mingling and mixing up) is an impassioned and irrational companion, as well as an irrational consequence that effectuates passions against (human) nature. The calf is one, which means that the habit of an evil is being scattered into many sorts of evil. The calf, on the other, is enduring, industrious, cultivating and indeed digestive and thoughtful, just like ruminating about the evil disposition that is related to passions. It is also molten (the calf) for what is being left in mind from the evil imagination, constitutes the habit and energy of passions. As to the ‘your gods, Israel’ which has been said in plural, is due to the evil existing scattered in nature, (that) never stands still and it is multiform and fragmenting. For, if good is naturally uniting and bringing together what has been fragmented, the evil is fragmenting and corrupting what has been united - Μόσχος οὖν ἔστι χωνευτὸς ἢ τῶν κατὰ φύσιν δυνάμεων εἰς ἀλλήλας φύσεις καὶ σύγχυσις, ἢ μᾶλλον σύνδοξος ἐμπαθῆς καὶ ἀλόγιστος καὶ τῆς ἀλογίστου τῶν παρὰ φύσιν παθῶν ἐνεργείας

<sup>16</sup> Reference to the ‘Golden Calf’ the Israelites had built during Moses’ absence on Mount Sinai to receive the Ten Commandments from God can be found in (Exodus 32: 1-4). “Καὶ ἰδὼν ὁ λαὸς ὅτι κεχρόνικε Μωυσῆς καταβῆναι ἐκ τοῦ ὄρους, συνέστη ὁ λαὸς ἐπὶ Ἀαρὼν καὶ λέγουσιν αὐτῷ· ἀνάστηθι καὶ ποίησον ἡμῖν θεούς, οἱ προπορεύονται ἡμῶν· ὁ γὰρ Μωυσῆς οὗτος ὁ ἄνθρωπος, ὃς ἐξήγαγεν ἡμᾶς ἐκ γῆς Αἰγύπτου, οὐκ οἶδαμεν τί γέγονεν αὐτῷ. καὶ λέγει αὐτοῖς Ἀαρὼν· περιελέσθε τὰ ἐνώτια τὰ χρυσᾶ τὰ ἐν τοῖς ὠσὶ τῶν γυναικῶν ὑμῶν καὶ θυγατέρων καὶ ἐνέγκατε πρὸς με. καὶ περιείλαντο πᾶς ὁ λαὸς τὰ ἐνώτια τὰ χρυσᾶ τὰ ἐν τοῖς ὠσὶ αὐτῶν καὶ ἤνεγκαν πρὸς Ἀαρὼν. καὶ ἐδέξατο ἐκ τῶν χειρῶν αὐτῶν καὶ ἐπλασεν αὐτὰ ἐν τῇ γραφίδι καὶ ἐποίησεν αὐτὰ μόσχον χωνευτὸν καὶ εἶπεν· οὗτοι οἱ θεοί σου Ἰσραὴλ, οἵτινες ἀνεβίβασάν σε ἐκ γῆς Αἰγύπτου—And when the people saw that Moses delayed to come down out of the mount, the people gathered themselves together unto Aaron, and said unto him, Up, make us gods, which shall go before us; for as for this Moses, the man that brought us up out of the land of Egypt, we know not what is become of him. And Aaron said unto them, Break off the golden earrings, which are in the ears of your wives, of your sons, and of your daughters, and bring them unto me. And all the people brake off the golden earrings, which were in their ears, and brought them unto Aaron. And he received them at their hand, and fashioned it with a graving tool, after he had made it a molten calf: and they said, These be thy gods, O Israel, which brought thee up out of the land of Egypt”.

ἀποτελεσματική εἶς δὲ μόσχος, ὅτι μία κακίας ἕξις, εἰς πολλὰ κακίας εἶδη διασκεδαζομένη· μόσχος δέ, διὰ τὸ καρτερικὸν καὶ φιλόπονον καὶ γεωργικὸν καὶ οἶον ἀναδοτικὸν καὶ ἐπινοητικὸν, ὡς ἐν μηρυκισμῷ, τῆς περὶ τὰ πάθη κακῆς διαθέσεως· χωνευτὸς δέ, ὅτι κατ' εἶδος τῆς προαποκειμένης τῆς διανοίας κακῆς φαντασίας ἢ τῶν παθῶν ἕξις ἀποτελεῖται καὶ ἐνέργεια· τὸ δὲ οὗτοι οἱ θεοὶ σου, Ἰσραήλ, πληθυντικῶς εἰρημένον, ἐπειδὴ σκεδαστὸν φύσει τὸ κακὸν ὑπάρχει καὶ ἄστατον καὶ πολύμορφον καὶ διαιρετικόν. Εἰ γὰρ φύσει τὸ καλὸν ἐστὶν ἐνοποιητικὸν τῶν διηρημένων καὶ συνεχτικόν, τὸ κακὸν δηλονότι τῶν ἴνωμένων ἐστὶ διαιρετικόν τε καὶ φθαρτικόν<sup>17</sup>·.

Ruminative thinking for St. Maximus is actually an irrational preference of the mind to sustain appraisals that are totally unhelpful; in other words, they do not lead the mind anywhere, just in a vicious circle of thoughts, which hinder the mind from thinking creatively. In the above extract what is argued about rumination is that it confuses the mind by 'building up' appraisals of faulty thinking that cause chaos and disorder in the mind and by extent to whatever is produced by it, whether emotions or tendencies and attitudes. To my understanding, the above extract culminates St. Maximus the Confessor's psychology on ruminative thinking and it is in concert to the findings of the present study.

That is to say that:

1. Ruminative thinking is an obstacle and burden to the mind as well as a process which doesn't beget helpful appraisals
2. Ruminative thinking is mainly negative in context for it creates problematic preoccupation with interpretations that do not assist psycho-spiritual balance in man
3. Ruminative thinking is a confusing and irrational experience which obstructs the human mind from selecting constructive and creative choices in life

In relation to the findings of the present study, ruminative thinking proves a negative experience, which doesn't help individuals to have progress in life. Such understanding comes out of the second inventory that was formed by St. Maximus' work of *Questions to Thalassius*. The fact that, ruminative thinking is an irrational preference of the mind, as stated above, comes out of the responses about negative rumination participants have scored through the second inventory, such as 'I tend to think too much before I do anything', 'When my mind is bombarded by thoughts, I find difficult to concentrate', 'Things I have done and think of them make me suffer', or 'Personal thinking depends on the knowledge what I did wrong'. Statements as such present ruminative thinking not only as a negative experience, but as an experience which divides and fragments the intellectual potential in man. Ruminative thinking is the culmination of negative appraisals influencing emotional reasoning and bringing about tendencies through which one cannot come to terms with a fruitful understanding of things in life, with respect to the understanding of what they may signify for him as to one's psychological, spiritual and physical prosperity and balance.

### Similarities and differences between the two inventories

<sup>17</sup> This extract has been referred to for the understanding of ruminative thinking in the introduction. In the introduction, this extract is not found in whole for the presentation of the term 'rumination' had to be related with other aspects of St. Maximus' psychology. Here, in discussion, is mentioned in full for the aim is readers to understand that ruminative thinking is the 'interpreter' of events which receives a negative understanding by the human mind, such as Moses' absence received by the Israelites as an event which could imply that God forgot about them – this is what the past tense 'received' when Moses 'delayed coming down' from Mount Sinai means in this context (see extract above). In a future paper, *the understanding of an event which thought of as bearing a negative outcome and generating irrational thinking and faulty emotions* will be discussed in relation to the context of this extract.

Both inventories, though their statements refer to irrational and unhelpful thinking, they do relate to unwanted emotions as well. Thoughts and emotions are interchangeably associated to each other, for the former explains the way people position themselves before events and the latter what follows in terms of sensations and feelings in view to behaviours of avoidance.

In the *Response Styles Questionnaire (RSQ)* statements refer to an understanding of ruminative thinking with regards to the individual. I would call such approach an 'individual's perceived view of ruminative thinking' which does not examine how such recursive thinking impacts on the lives of others, or how others' choices in life might influence one's recursive thinking.

In the *Rumination and the Wakefulness of the Mind Inventory (RWMI)* statements are presented with a gamut of concepts, such as:

- a. Ruminative thinking and the self
- b. Ruminative thinking and anticipation of solutions
- c. Ruminative thinking and emotions
- d. Ruminative thinking and personal performance
- e. Ruminative thinking and possible outcomes of it
- f. Ruminative thinking and self-contemplation
- g. Ruminative thinking and behaviour
- h. Ruminative thinking and self-knowledge

In the former inventory, the RSQ, we see general but not specific associations of recursive thinking to representations of rumination; in the latter, the RWMI, we see specific associations to recursive thinking which address ruminative representations.

### **Strengths to the present study**

Strengths of the present study refer to the support of the hypothesis tested and the fact that St. Maximus' writings present a wealth of psychological interpretations on the psychosomatic edifice of man, which can yet be discovered. The findings of the study explain why rumination is an important issue for the human mind and the relation that it holds with emotions and behaviour. Another strength is that rumination may also indicate wakefulness for it keeps man alert in dealing with matters, which disturb one psychologically. Wakefulness should be considered part of ruminative thinking for on the one hand underlines the need oneself to be aware of what takes place around him/her and on the other that such awareness could keep one closer to oneself as to the needs that have to be fulfilled and expectations to be met. A final strength to this study lies with the discovery that the writings of the Church Fathers are century-old psychologies addressing the concept of personal commitment in order that solutions to be established not only for the person in question, but also for others in circulation to oneself, as well as the environment one lives and the obstacles to overcome. In this way, what one's adaptive needs depend on, i.e. the selection of problem solving processes, can be fruitful in the long-term, so that to enhance one's longing for survival and creativity.

### **Limitations to the present study**

One limitation is the variability of the age range (19 to 82) employed in this study. What could be done would be to have participants the age of which should not be more than 20yrs difference; that is to say, participants between 20 and 40 years old, or participants between 30 and 50 years old. In this way,

participants would belong to the same generation with respect to the understanding of the items of the inventories, being closer to their interests and knowledge of everyday life. Another limitation is that there has not been conducted a pilot study with regards to the self-devised inventory of ‘Rumination and Wakefulness of the Mind’ (RWMI). If a pilot study had taken place there could be identified obstacles, such as items which shouldn’t be used and therefore would need to be abolished and replaced by others. Another limitation is that participants who performed in this study were Greek-Orthodox and not from other ethnicity. If participants weren’t Greek-Orthodox solely, but Orthodox from other countries as well there could possibly be identified other factors, such as demographics influencing recruiters’ responses on the statements, or considerations on thinking and feeling issues the way Orthodox from other backgrounds would understand it. Another limitation is that only Orthodox Christians have participated. If there was to be included Christians from other denominations, the findings could probably open more fields for discussion. By that I mean that Christians from other denominations could probably present an understanding of the inventories – especially the second one – which could add further comments to the findings of the present study.

### Future replication of the study

In a future study what I could do, could be to compose an inventory about ruminative thinking by incorporating more statements from St. Maximus’ work of *Questions to Thalassius*, so that to study not only rumination, but what is also associated to it, such as avoidant behaviours resulting from events (cognitive analysis) and negative consequences of antecedents (functional analysis). A title I could give to such an inventory could be:

*“The Thinking and Acting Response Inventory (TARI): Statements on the psychology of human mind taken from St. Maximus the Confessor’s work of ‘Questions to Thalassius’”*

In this way, I could examine ‘Questions to Thalassius’ in terms of cognitive behavioural therapy and how the latter could be improved by taking into account St. Maximus’ psychological anthropology. Such an academic endeavour could explore St. Maximus’ writings in reference to what this father of the Church has also to offer with regards to the psychological interpretation of human mind and behaviour.

### Conclusion

The present study examined the relationship between ruminative thinking and psychopathology. Two different approaches have been employed: one by evolutionary psychology and one through the writings of St. Maximus the Confessor. The hypothesis tested in this study referred to correlation issues between rumination and psychopathology. This hypothesis has been supported in the light of the findings extracted from the scores participants rated the items of RSQ and RWMI inventories. Gender differences have also been observed, in that males more or less consider positive and negative ruminative thinking dissimilar in terms of human cognition whilst females regard them as likely equal to one another.

In the discussion which followed, the findings have been re-visited and explored in line to psychopathology considerations suggested by evolutionary psychology; in line to St. Maximus understanding of ruminative thinking; in line whether such thinking could be regarded negative or positive; in line to strengths and limitations of the study; in line to what could be argued in a future replication of this study and what else to be approached so findings to be elaborated to other aspects of concern to rumination.

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**Appendix A**  
**Response Styles Questionnaire**

Note: You are kindly asked to rate all items - please circle one figure only

(Items, which were kept for the present study, are: 4, 8, 12, 15, 19, 25, 36, 44, 51 and 26;)

1. I think "I am not going to think about how I feel"  
-3    -2    -1    0    1    2    3
2. I think about how hard it is to concentrate  
-3    -2    -1    0    1    2    3
3. I think "I am going to do something to make myself feel better"  
-3    -2    -1    0    1    2    3
4. I think about how passive and unmotivated I feel  
-3    -2    -1    0    1    2    3
5. I think about how I don't seem to feel anything anymore  
-3    -2    -1    0    1    2    3
6. I go away by myself and think about why I feel this way  
-3    -2    -1    0    1    2    3
7. I think "there must be something wrong with me or I wouldn't feel this way"  
-3    -2    -1    0    1    2    3
8. I think about all my shortcomings, failings, faults, mistakes  
-3    -2    -1    0    1    2    3
9. I think "I am disappointing God"  
-3    -2    -1    0    1    2    3
10. I talk it out with someone whose opinions I respect (i.e. friend, family, clergy)  
-3    -2    -1    0    1    2    3

**Appendix B**  
**Rumination and the Wakefulness of the Mind Inventory**

(An example of statements taken from St. Maximus the Confessor's work of 'Questions to Thalassius')

Note: You are kindly asked to rate all items - please circle one figure only

1. I tend to think too much before I do anything  
-3    -2    -1    0    1    2    3
2. In thinking issues that concern me is helpful towards finding solutions overcoming them  
-3    -2    -1    0    1    2    3
3. Sometimes, I have thoughts which do not help me emotionally  
-3    -2    -1    0    1    2    3
4. I believe thoughts and emotions are not related whatsoever  
-3    -2    -1    0    1    2    3
5. When my mind is bombarded by thoughts, I find difficult to concentrate  
-3    -2    -1    0    1    2    3
6. It is good to have thoughts, even though I feel embarrassed about them  
-3    -2    -1    0    1    2    3
7. Things I have done and think of them make me suffer  
-3    -2    -1    0    1    2    3
8. I try to explain my thoughts and find this assistive  
-3    -2    -1    0    1    2    3

9. Thinking and acting makes me feeling stronger

-3    -2    -1    0    1    2    3

10. Personal thinking depends on the knowledge what I did wrong

-3    -2    -1    0    1    2    3

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