International Journal of Applied Psychology 2016, 6(4): 100-109
DOI: 10.5923/j.ijap.20160604.04

New Dimensions of Stress and Its Numerical Modeling

Ktiri Fouad

Psychology Department, Institut Supérieur des Professions Infirmières et Techniques de la Santé, Rabat, Morocco

Abstract In the present study we introduce a new stress approach, which completes the transactional theory of Folkman and Lazarus (1984). It is a numerical model in which we take into account another variable named PSS (Previous State of Stress) that we estimate necessary to explain why psychological state of stress occurs or not. In our model, stress is presented in the form of a mathematical function (equation) of three variables (PSS, SV, R). By evaluating each of these components, this equation will allow us to evaluate the generated stress intensity of a person. By improving this formula, the present model allows us to take account into another type of stimulus (positive stimulus) and to evaluate it. Many case examples of daily stress, that take account into these new dimensions, are been cited. The stress formula efficiency has been tested by applying it on these examples and to some concepts like violence and stress accumulation. RQSI (Required Quantity of Stress Index) is an index that we develop in our numerical model. The calculated RQSI allows us to evaluate the average amount of stress (positive or negative) that a person receives from each stimulus he has been exposed to during a period of time. A new definition of stress phenomena, on the base of our new numerical model data, is proposed.

Keywords Stress, Previous State of Stress, Stress formula, Positive stimulus, Required Quantity of Stress Index

1. Introduction

For almost a century, many psychological stress-related studies have being done. Theoretical, empirical and physiological stress researches have being carried out in order to try to understand the emotional stress nature and to explain its harmful effects on physical and mental health.

For this purpose, many models were developed, and each new model came to criticise and complete its predecessor.

Cannon (1932) [1] developed a model in which he considered stress as a reaction of the body to stressors. The next theory developed by Selye, named the General Adaptation Syndrome (1956) [2], describes the body response to stress through three phases, alarm, resistance and exhaustion. In this perspective, the author defined stress as "the non-specific response of the body to any demand for change".

In 1984 Folkman and Lazarus, by taking also into account the contribution of the person to the occurrence of stress, developed the transactional model in which they considered stress as an interaction between the individual and the environment that is appraised by this latter as taxing or exceeding his or her resources and endangering his or her well-being. In this model, stress is a process during which the individual interprets stressors and evaluates them, then uses coping strategies, if available, in order to be able to fight stress or eliminate stressors [3].

* Corresponding author:
f_ktiri@yahoo.com (Ktiri Fouad)
Published online at http://journal.sapub.org/ijap

In our present numerical and theoretical model that we are considering as a complement of the transactional theory of Folkman and Lazarus, we introduce two other variables: PSS (Previous State of Stress) and positive stimulus (PS) that, according to our knowledge, have not been taken into account in the other models. The variable PSS, or the first new dimension, is the Previous State of Stress (neutral, positive or negative) a person is experiencing before encountering another stressor.

The positive stimulus, the second type of stimuli which we take into account in our model, and that the other models have not considered it, is a stimulus that could reduce, fight stress or even create positive states (joy, happiness,…).

The word stress, represented by S in our numerical model, is the state (neutral: no stress), (negative: stress) or (positive: happiness) that a person experiences after having encountered a stimulus.

This new model presents stress (S) and its components (PSS, SV (stimulus value) and R (resource)) in a mathematical equation, which allows us to measure it.

In order to take into account the positive stimulus (PS) we will change the structure of the stress formula by assembling SV and R in one new variable named ST. this latter, representing the value of a stimulus, could be negative, null or positive.

This model allows us also to develop a new index, named RQSI (Required Quantity of Stress Index), that represents the average amount of stress (positive, negative) that a person receives from each stimulus he has been exposed to during a period of time in which he has encountered a number of stimuli.

2. The First New Dimension of Stress (PSS)

If the occurrence of the subjective state of stress, according to the transactional model (R. S. Lazarus & S. Folkman, 1984) [3], depends first on the appraisal of the stimulus (threatening versus not threatening) then on the availability of resources with which we could fight this stress factor, there is, however, another dimension we should take into account. This new variable, that we name Previous State of stress (PSS), is indispensable for the stress state to be experienced or not. PSS will also enable us to take into account the stress intensity and its accumulation for a period.

A person, before encountering any internal (exam anxiety,..) or external (noise,…) stimulus and evaluating its threatening value (small or great), was already, without any doubt, undergoing (feeling) an internal physiological state we could describe as pleasant (joy) or unpleasant (stress) or neutral (no stress). This state of stress, we have named Previous State of Stress (PSS), could have a neutral (normal), positive (happy) or negative (anxious) values, and, consequently, will have, certainly, a neutral, positive or negative impact on the appraisal of the encountered stimulus. A person, for example, can be stressed (nervous) or not (calm) before he hears a noise (the next stimulus).

Thus, the transaction between the subject and his/her internal or external environment (stimuli) would be done by his physiological state (PSS) first, and then by his cognitive system (stimuli appraisal). These two dimensions, then, are indispensable for the stress to occur or not.

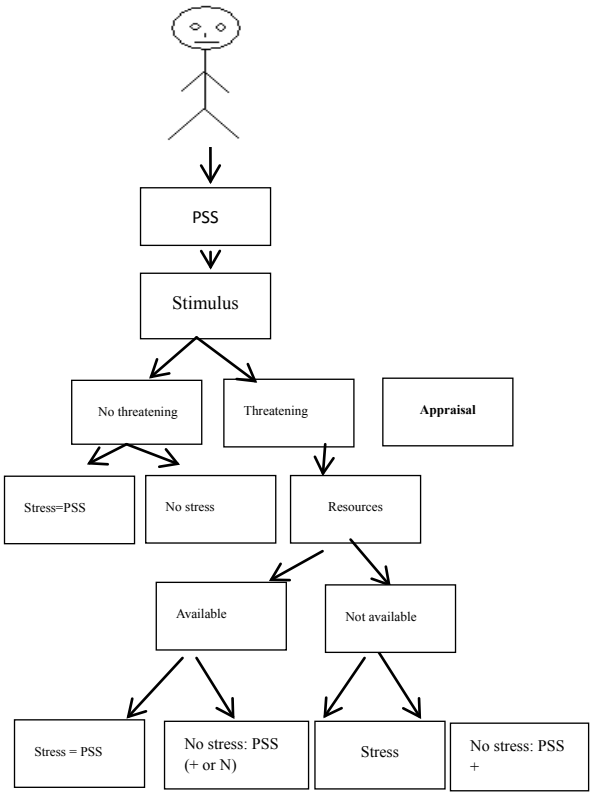


Figure 1. The influence of PSS on the appraisal of the stimulus

The appraisal of the stimulus is influenced by the previous state of stress (PSS) (Figure 1). Its threatening value is a production of the combination of the PSS and the appraisal of the stimulus. Even if a person could find resources to fight the threatened-perceived stimulus, he could remain negatively stressed if he had been in a negative PSS.

3. New Notions and Examples

Before citing some examples in which we take into account the variable PSS, we introduce new notions, namely neutral stimulus (NS), positive stimulus (PS) (see heading "5. The Introduction of Positive Stimulus" bottom) and stressful stimulus (SS). NS, PS and SS are stimuli which respectively, do not create, could reduce and creates stress, usually for a specific person.

With the help of the PSS variable, we will show that a neutral stimulus (NS) could create negative stress and a stressful stimulus (SS) could not create it.

3.1. A Neutral Stimulus (NS) could Create Stress

If a person is used to read or write in a noisy environment (cafe, library…), this noise is a neutral stimulus (NS) for him/her. Nevertheless, this NS could be stressful in the same environment, if this person did not sleep well the night before (Figure 2).

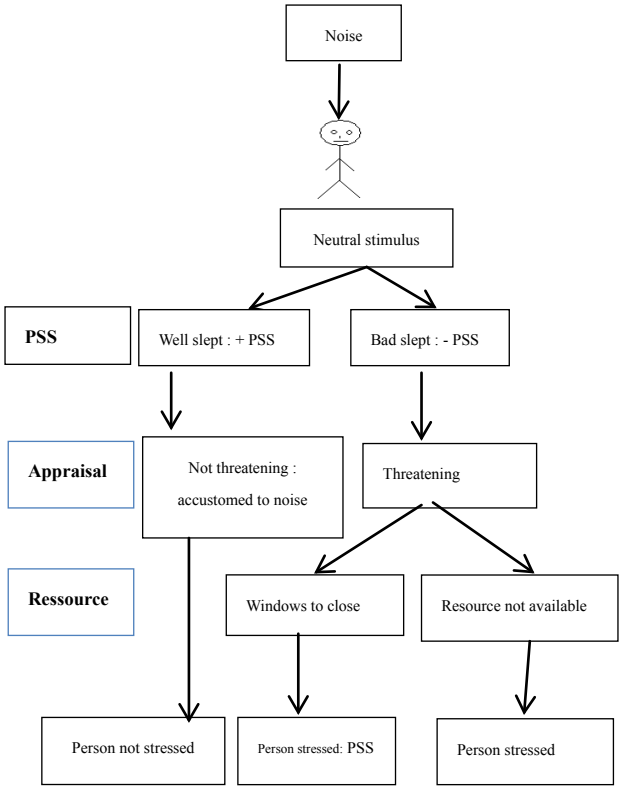


Figure 2. A neutral stimulus could create stress

According to researchers, sleep affects human body and its stress-system that enables us to deal with every-day challenges. Insufficient sleep alters activity and reactivity of

this system [4]. It can amplify emotional difficulties and produce further sources of distress [5].

In contrary of the transactional theory of stress, the person in this case would remain negatively stressed despite the availability of the resources (windows closed for example), because he was already in an unpleasant state of mood (negative PSS).

3.2. A Stressful Stimulus could not Create Stress

If a person wants to get his money back from someone to whom he has lent it, whereas this latter has not respected the deadline of paying back, this would not constitute a negative stress factor for him/her if he/she was in a great state of joy, and could postpone the maturity date.

The previous state of joy (+PSS) would then avoid the stressful stimulus (the repayment failure) to be a negative stress factor (Figure 3).

According to previous researches, endorphins may be part of the physiological mechanisms that mediate adrenaline and glucagon release in response to stress [6]. Endorphins are considered the hormones of happiness. They are released when we are filled with state of joy [7].

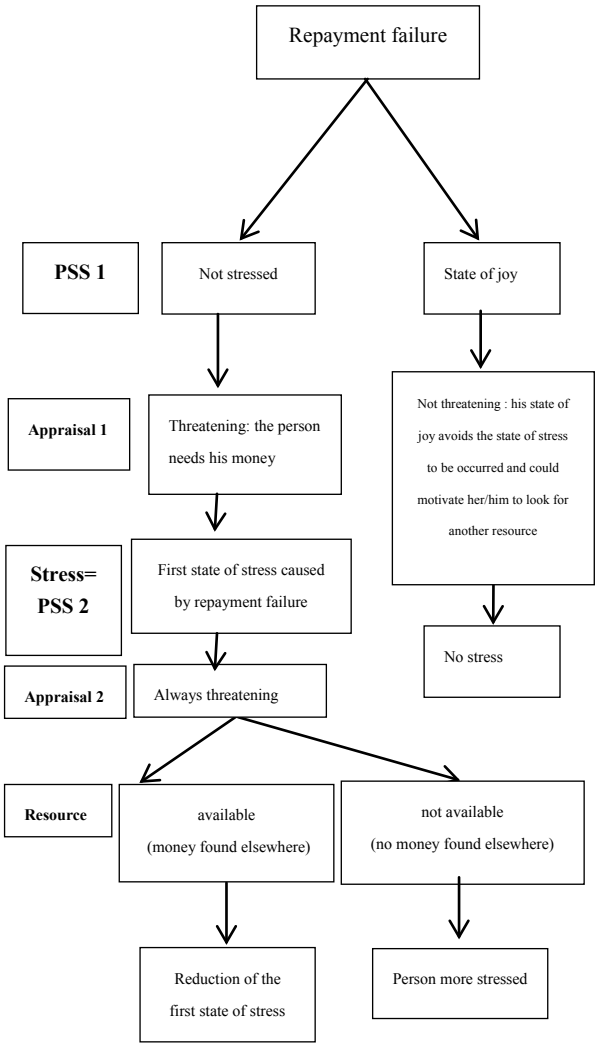


Figure 3. A stressful stimulus could not create stress

3.3. A Stressful Stimulus could Create a State of Joy in Spite of a State of Stress

If, for example, I cannot call someone, because my phone account is expired or its battery is discharged, this situation, according to the previous state of stress (PSS), could be stressed, much stressed or even might create a state of joy (Figure 4).

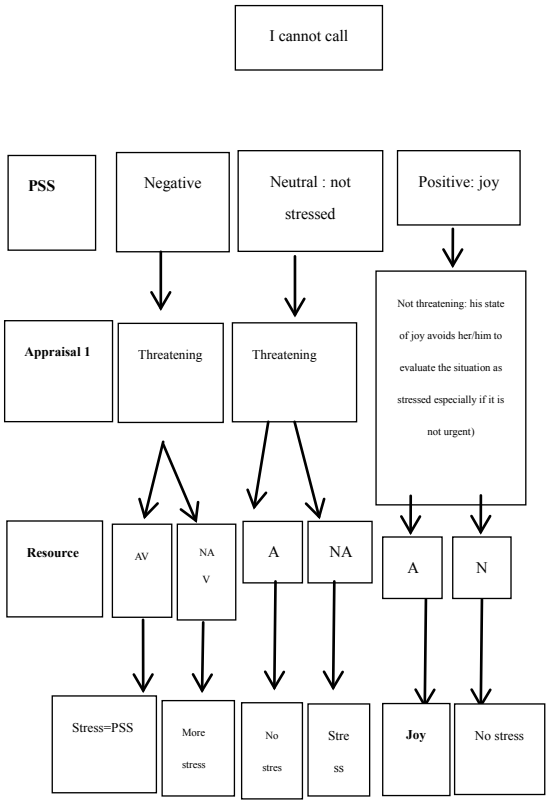


Figure 4. A Stressful Stimulus Could Create a State of Joy

4. A Mathematical Equation of Stress

Based on the above examples and on the variable PSS (Previous State of Stress), we could set the following formula of stress:

$$\mathbf{S = PSS + SV + R} \quad (1)$$

With:

S: the state of stress a person will experience when he/she encounters a new stimulus. S could be null, positive or negative.

PSS: the previous state of stress the person was experiencing before he/she will encounter the new stimulus, which could create a new state of stress (null, negative, more negative, positive).

The previous state a person feels before encountering another stressor could last a long time.

SV: the value of the stimulus a person attributes to the stimulus (threatening versus not threatening). It represents the appraisal of the stimulus.

R: the presence or absence of the resource that enables us to get rid of the threat or danger.

Hypothesis:

- S is negative if the person is stressed: Its value depends on the intensity of the unpleasant state of stress. S = -1 (person stressed),-2 (very stressed),…
- S is positive if the person feels happy (S=+1,…).
- S is null if the person is not stressed nor happy
- PSS is negative when the person was already stressed PSS=-1 (stressed), -2 (very stressed)…
- PSS is null if the person is not stressed nor happy
- PSS is positive if the person is happy: PSS= +1, +2,…
- R is null if there is no resource available: R=0
- R = 1 if a resource is available
- SV = -1 if the stimulus is perceived as threatening (noise, …)
- SV =-2 if the stimulus is perceived as very threatening (ex: need to phone to solve an urgent problem, but the telephone battery is discharged).
- SV = 0 if the stimulus is not perceived as threatening

4.1. The Application of the Stress Formula

4.1.1. A Previous State of Stress and a Neutral Stimulus

A stressed person, whose previous state of stress is negative (PSS=-1), remains stressed, even if he encounters a non-stressful stimulus (perceived not stressful: SV=0), until he could fight his stress (rest,…).

PSS=-1

SV=0 (no stressor)

R=0 (we do not need a resource, because SV=0)

S=PSS+SV+R
= (-1) +0+0
= -1

If the stressed person (S=-1) has rest, he will not be stressed (S=0). We consider rest, which helps the person to fight his stress, as a positive stimulus (see heading "5. The Introduction of Positive Stimulus" bottom).

Thus, the state of stress does not vary by itself over time, but it is influenced by the presence of stimuli (positive or negative).

Example: a person who has not slept well or taken a lot of coffee becomes stressed out. Even, if he will not encounter stressful stimuli, this person remains stressed [4] [5].

4.1.2. A Previous State of Stress and a Stressful Stimulus

A stressed person, whose PSS is negative (PSS=-1), becomes more stressed out (stress accumulation), if he encounters an another stress factor (a threatening stimulus and the non availability of a resource to eliminate the stressor: SV=-1 and R=0).

PSS=-1

SV=-1

R=0

S=PSS+SV+R
= (-1)+ (-1) +0
=-2

According to researchers, stress accumulation models suggest multiple stressors may interact to have more negative effects [8].

Examples:

1- A person, who hasn't got enough sleep, becomes nervous if he is exposed to a loud disturbing noise.

$$S= PSS + SV + R = (-1) + (-1) + 0= -2$$

2- A person who is used to taking lots of coffee (always stressed [11]) could become easily nervous and even violent in some situations.

$$S = PSS + SV + R = (-1) + (-1) + 0 = -2$$

Every time he takes coffee, he becomes stressed out, so that he might become much stressed and even violent (S=-3) if he encounters stressful stimuli.

Research findings show robust additive explanatory power of caffeine for both violent behaviors and conduct disorders. In addition, the association of caffeine to the outcomes is significantly stronger for girls than boys for both violent behaviors and conduct disorders [9].

A person who suffers from insomnia or takes a lot of coffee will become stressed out. His mood will be affected by sleep deprivation [10] or from the abuse of coffee [11].

4.1.3. A Previous State of Stress and a Threatening Stimulus

A stressed person, whose PSS is negative (PSS=-1) remains always stressed even if he could fight a stimulus appraised as threatening (SV=-1 and R=1).

PSS = -1

SV = -1

R = +1

S = PSS + SV + R
= (-1) + (-1) + (+1) = -1

Example: a person, who hasn't got enough sleep (PSS=-1), in the presence of a loud disturbing noise, remains stressed even if he could get rid of this noise (close the windows for example).

4.1.4. A Previous State of Joy and a Threatening Stimulus

A happy person (PSS=+1), in the presence of a very threatening stimulus (SV=-2), won't become stressed out, but will not remain happy even if he could eliminate the effect of the stressor (R=+1) (the effects of happiness: [6], [7], [12]). "Happiness functions as a buffer against stress" [12].

PSS = +1

SV = -2

R = +1

S = PSS + SV + R
= (+1) + (-2) + (+1)
= 0 (not stressed)

Related examples

1- If a happy person (PSS=+1) has to take someone ill (a member of his family) urgently to a hospital (SV=-2), he will not become stressed out (S=0), if he/she can phone and find an ambulance (R=+1), but he will not remain happy.

S = PSS + SV + R = (+1) + (-2) + (+1) = 0

2- If, at the hospital, the doctor said that the patient is very ill (SV=-1, -2), the person will become then stressed or more stressed out. (R is null because, at this moment, PSS=0 = and the person cannot fight the stressor (the doctor diagnosis).

S = PSS + SV + R = 0 + (-1) + 0 = -1

3- If the doctor said that he could find medication (R=+1), the person will not be stressed).

S=PSS + SV + R = (-1) + (0) + (+1) = 0

2 solutions

1) S = (0) + (-1) + (+1: medication) = 0: not stressed

2)

* S1 = (0) + (-1) + (0) = -1 (step 1: stressed)
* S2 = (-1) + (0) + (+1) = 0 (step 2: not stressed)

In this example, we see how stress intensity can vary over a short period of time.

4.1.5. A Previous State of Joy and a Very Threatening Stimulus

A happy person (PSS=+1) facing a very threatening stimulus (SV=-2) without been able to find a resource (R=0) becomes stressed.

PSS = +1

SV = -2

R = 0

S= (+1) + (-2) + (0)= -1(stressed)

Example 1: if a happy person has to take someone of his family (very ill: SV=-2) to a hospital, but he cannot find a telephone to call an ambulance (R=0), his previous state of joy would only reduce his stress intensity. He would then remain stressed out but not very stressed out. Negative or positive affects are respectively associated with higher and lower cortisol levels [13].

Example 2: a happy student (PSS=+1) was told that the exam results had been published:

1) If the student was in the school:

His/her fear of success (SV=-1) will take his/her happiness away, but positive or negative results would make him/her respectively feel very happy or more stressed out.

S = PSS + SV + R = (+1) + (-1) + (0) = 0 = new PSS

1-1) If the results are negative, he will become very much stressed:

S= (0) + (-2) + (0) = - 2 (R=0 because the results cannot be changed)

1-2) If the results are positive (SV=+2), he will become very happy.

S= (0) + (+2) + (0) = +2

2) If the student was at home:

His/her fear of success (SV=-1) will take his/her happiness away, but positive or negative results would make him/her respectively feel very happy or more stressed out. However, all the way from home to school, his/her negative thoughts will create negative stress for him/her.

S = PSS + SV + R = (+1) + (-1) + (0) =0 = new PSS

2-1) along the way

S = (0) + (-1: negative thoughts) + (0) = -1= new PSS

2-2) In the school: If the results are negative, he will become very much stressed:

S= (-1) + (-2) + (0) = - 2 (R=0 because the results cannot be changed)

2-3) If the results are positive (SV = +2), he will become happy.

S= (-1) + (+2) + (0) = +1

4.1.6. A Previous State of Joy and the Availability of Resources

Would a happy (very happy) person remain happy if the resource were available or not (SV=-1, R=0, 1)?

1) R available (+1) and happy state (PSS=+1)

S = (+1) + (-1) + (+1) = +1 : happy

2) R not available (0) and happy state (PSS=+1)

S = (+1) + (-1) + (0) = 0 : not happy but not stressed

3) R available (+1) and very happy state (PSS=+2)

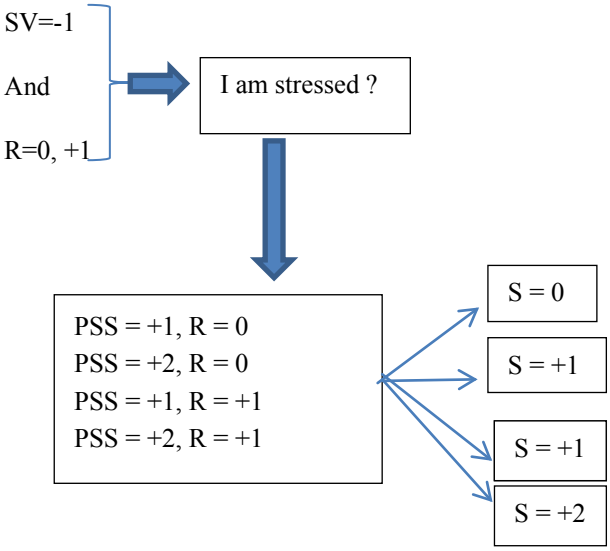
S = (+2) + (-1) + (+1) = +2 : very happy

4) R not available (0) and very happy state (+2)

S = (+2) + (-1) + (0) = +1: happy

- Then, even in the presence of a stressor (negative stimulus with R absent), would I be not stressed out, if I am happy?
- Yes, because as if a stressed person uses ways to entertain himself (positive stimulus: SV=+1. see heading “5. The Introduction of Positive Stimulus” bottom) (laughing for example, will fight his stress (S=0).
- S = PSS + SV + R = (+1) + (-1) + (0) = 0 : the state of happiness (PSS=+1) fights the stressor (-1)

- S = PSS + SV + R = (-1) + (+1) + (0) = 0 : the positive stimulus (SV=+1) fights the previous state of stress (PSS=-1)



SV=+1 is a stimulus (laughing for example) that we evaluate positive and that makes us feel happy.

4.1.7. The Violence

Violence could be described as a great state of negative stress. Violence, or aggressiveness, is a response which could be created by a stress factor that is added to a negative previous state of stress (PSS<0).

A smoking-addicted person, for example, who did not smoke his first cigarette in the morning, feels stressed out. If this person is exposed to another stress factor (another person who will insult him/her for example), could become violent.

- Not smoked: PSS = -1 (or -2)
- Insult interpreted as negative: ST (SV+R) = -1 (or -2)
- In this case, R=0, because he cannot get rid of the insult. It is too late.

Then S = (-1) + (-1) + (0) = -2 (violence).

5. The Introduction of Positive Stimulus Concept and a New Structure of the Stress Equation

A person is not always encountering only negative stimuli that create stress for him/her. Positive stimuli exist too and could reduce, fight stress or even make the person feel happy.

Taking account into positive stimuli (entertainment, laughing,…), we will change the structure of our stress formula and improve it by putting the following one :

$$\mathbf{S = PSS + ST} \quad (2)$$

With,

PSS: Previous State of Stress
ST: Stimulus value

Examples:

ST = +1 : if the stimulus is positive (joke, good news,…)
ST = -1 : if the stimulus is negative = SV + R = (-1) + 0
ST = 0 = SV + R = (-1) + (+1): not stressful (neutral)

A neutral stimulus is a stimulus which:

1) Is not perceived negative (stressful)
2) Is perceived negative (stressful), but whose effect was cancelled by a resource R (R=1).

The equation (S = PSS + ST) is more suitable than the first one (S = PSS + SV + R), because the resource (R=1) has a sense only when the stimulus is perceived as negative. R and SV are linked.

5.1. No Stimuli Means Positive Stimuli

The stress level varies throughout the day from negative, through a zero level (no stress and no happiness) to positive values. Stress level variation does not depend on time but on the presence of stimuli and their types (positive, negative and neutral). Stimuli are always present even if there is no negative stimulus.

The fact that a person is doing nothing but having rest could be valuated as a positive stimulus which could reduce his stress intensity. A man doing nothing but thinking negatively is anxious and this could be considered as a negative stimulus. A negative stimulus with R= 0 creates stress or increase its intensity and a positive stimulus reduces stress or makes us feel happy.

5.2. Positive Stimuli are Necessary to Fight Stress

Throughout the day, a person could be exposed to many negative stimuli. To fight them, he/she needs resources (R=1). However, resources are not always available. Thus, in order to be neutral (not stressed) or happy at the end of the day we have to be exposed to positive stimuli (rest, afternoon rest, relaxation, laughing, optimism,…). This can be proved as follows:

Hypothesis

Suppose that a person has slept well all night and waked up in the morning with PSS=0. The first state of stress that he/she could have is S1.

First stress state

$$S_1 = PSS + ST_1 \quad (3)$$

Stress state S_i at time i throughout the day

$$S_i = S_{i-1} + ST_i \quad (4)$$

Stress state at the end of the day

$$S_n = S_{n-1} + ST_n \quad (5)$$

$$S_n = PSS + \sum_{i=1}^{N} STi \quad (6)$$

$$\sum_{i=1}^{N} STi = \sum_{i=1}^{N} SVi + \sum_{i=1}^{N} R \qquad (7)$$

If all SV_i are negative, then ($\sum_{i=1}^{N} SVi + \sum_{i=1}^{N} R$) is negative, because for each SV_i R is not always available.

Then S (= S_n : stress state at the end of the day) is negative. Thus we need positive stimuli (ST_i =+1, +2,…) to fight negative SV_i. A person who does not make rest or look for entertainment is more likely to be stressed or very much stressed at the end of the day.

6. The Required Quantity of Stress Index: RQSI

We suppose that a person wakes up in the morning without feeling negatively stressed (PSS=0). The variation of PSS throughout the day and its value at the end of the day, depend on the stimuli to which the person will be exposed. By making two examples of two persons who have encountered respectively 7 (Table 1) and 4 stimuli (Table 2), we show their PSS variation in graphics respectively (Figure 5) and (Figure 6). We suppose that the first and the second person have respectively go to work and stayed at home throughout the day.

The stress state of each person throughout the day varies along the interval [-2,0], and its value (PSS) at the end of the day are -2 for the two persons.

Table 1. The first person (7 stimuli)

Time Ti	PSS	ST value after Ti	S=PSS+ST
0 Wake up	0	-1	0 – 1= -1
T1	-1	0	-1 + 0 = -1
T2	-1	+1	-1+1 = 0
T3	0	-1	0-1 = -1
T4	-1	-1	-1-1 = -2
T5	-2	0	-2+0 = -2
T6	-2	0	-2+0 = -2
T7	-2		End day

Table 2. The second person (4 stimuli)

Time Ti	PSS	ST value after Ti	S=PSS+ST
0 Wake up	0	-1	0 – 1= -1
T1	-1	0	-1 + 0 = -1
T2	-1	-1	-1-1 = -2
T3	-2	0	-2+0 = -2
T4	-2		End day

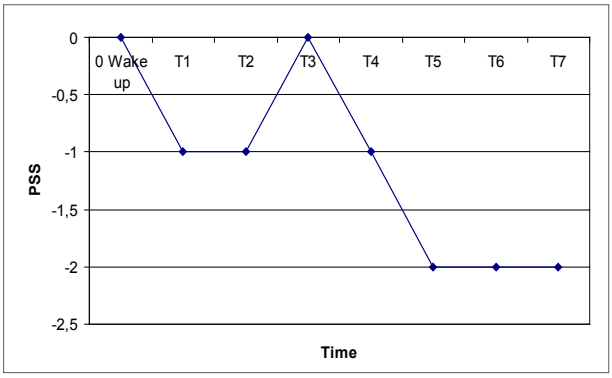


Figure 5. The first person (7 stimuli)

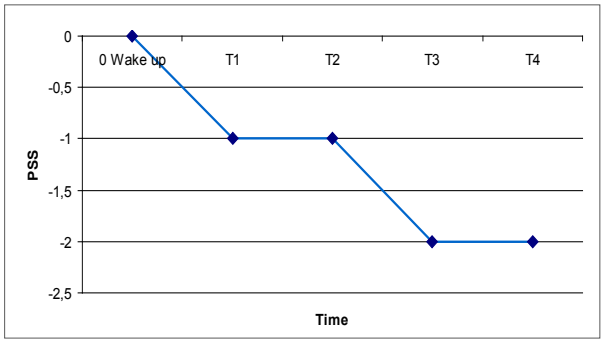


Figure 6. The second person (4 stimuli)

6.1. The Required Quantity of Stress Index: RQSI

Since we have 7 stimuli for the first person and 4 stimuli for the second, the average amounts of stress that these persons have received from each stimulus are respectively:

-2/7 = - 0,285 and -2/4 = - 0,500

-0,285 and -0,500 mean as if the two persons have respectively experienced – 0,285 and – 0,500 quantities of negative stress (average amount) from each stimulus to which they have been exposed throughout the day. The second person, who stayed at home and encountered less stimuli (4), has been more stressed (0,500>0,285). He has either been exposed to some negative stimuli for which he/she has not found a resource (R=0) or to a combination of positive and negative stimuli.

Then, for the same interval [-2,0], less is the stimuli number, more the person remains stressed out.

If we compare 2 other persons whose interval is [0, +1] with 7 stimuli and 5 stimuli, their RQSI are respectively

1/7=0,143 and 1/5=0,200.

0,143 and 0,200 mean as if the two persons have respectively experienced + 0,143 and + 0,200 quantities of positive stress (average amount) from each stimulus (laughing, rest,…) to which they have been exposed. The first person, who has worked and been exposed to more stimuli has used or been exposed to more positive stimuli to remain happy.

We name the value that represents the average amount of stress RQSI index.

The RQSI index can be defined as the average amount of stress (positive or negative) a person could receive from each stimulus he/she has been exposed to during a period of time in which he/she has encountered a number of stimuli. The function that calculates RQSI is then:

$$RQSI = \frac{SE}{N} \quad (8)$$

With,

- SE= the stress value (PSS) a person has at the end of the period of time (at the end of the day for example),
- N: number of stimuli

7. Stress Accumulation

S=PSS+ST
Time 0 : S = (+1) + (0) = +1
Time 1 : S = (+1) + (-1) = 0
Time 2 : S = 0 + (-1) = -1
Time 3 : S= (-1) + (-1) = -2

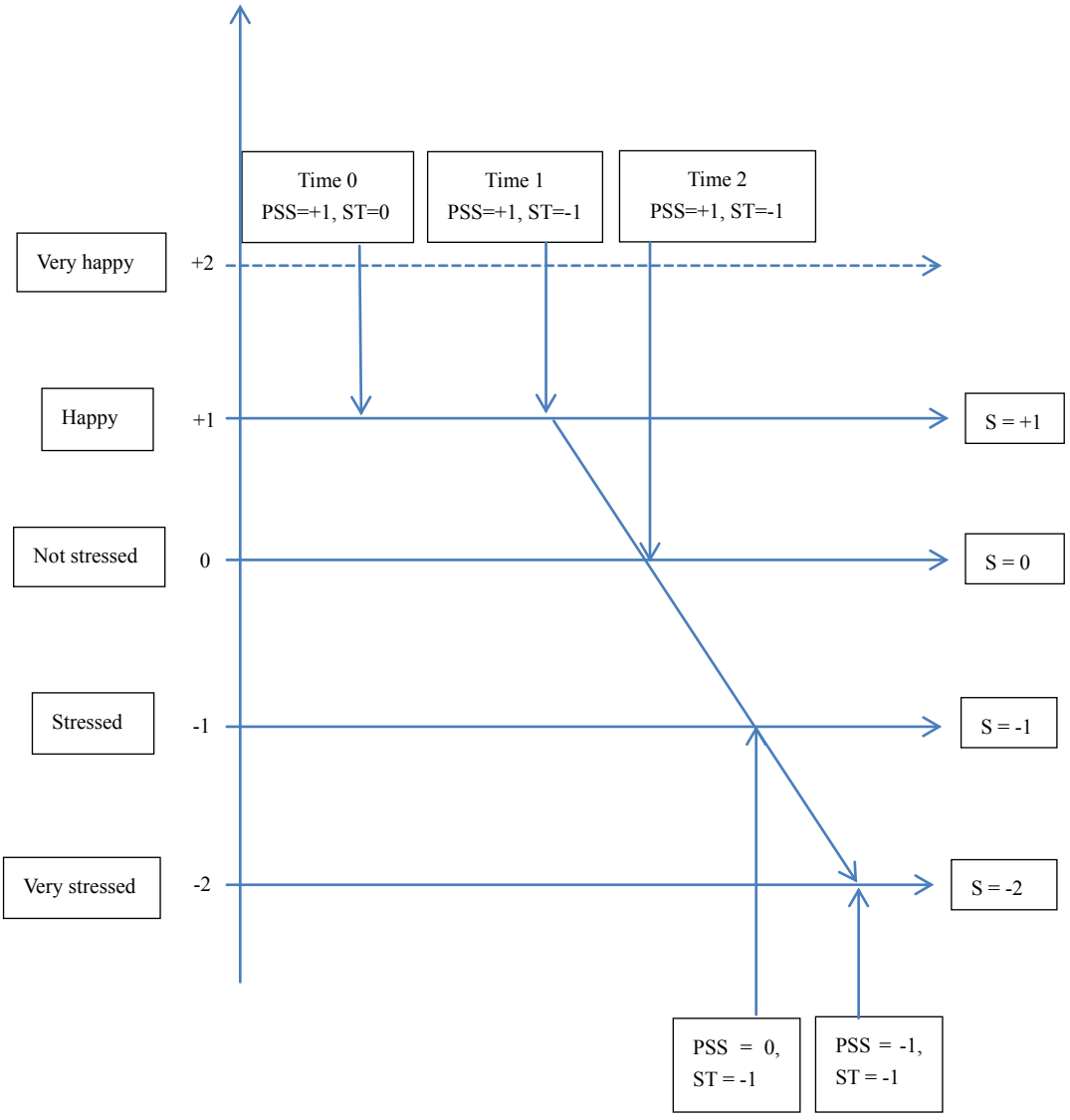


Figure 7. Stress Accumulation

From data presented in the figure above (Figure 7), we can deduce:

1/ the more one get exposed to stressors (negative stimuli perceived as threatened (SV=-1,-2,…)) without finding resources (R=0), the more one become stressed out, even if one was initially very happy (S=+1,0,-1,-2,…).

The subjective or perceived stress of multiple stressful events can present a potential threat, danger, change or challenge to one's well-being or survival [14]

To some researches, high and chronic stress with poor coping re-sources might as well produce psychopathological reactions, which termed anxiety disorders [14].

2/ It is very difficult for a very much stressed person to become neutral or happy, i.e. to reach zero axis
3/ A big negative impact of a trauma could make rapidly a person, even very happy, feel a great state of stress (to drop rapidly in the graphic) : S=-3,-4,…). We know that the post-traumatic stress disorder is a state of great stress which must be treated psychologically and/or with medicines.
4/ A person who wish to live without stress, must mostly have PSS>=1
5/ The more we are stressed out, the more there is a risk to become more stressed out.
6/ A person who is happy (PSS=+1,…), in spite of the presence of positive stimuli or the presence of resources, could become stressed out if he becomes tired (PSS=-1,-2,…). Then, the more a person is happy, the more he will be at a late or never stressed.
7/ The more we are less stressed (S=+1, +2, +3,…), the more we could remain less stressed out. To some researches, experiencing a positive emotion leads to states of mind and to modes of behavior that prepare an individual for later hard times. In broaden-and-build theory, Fredrickson proposed that the positive emotions broaden an individual's momentary mindset, and they are useful to build enduring personal coping resources [14].

8. A New Definition of Stress

On the base of the present new numerical approach of stress phenomenon, we define stress as: "The internal state of stress (positive or negative) a person experiences is the production of the transaction between his/her current state, his/her internal or external environnement and the availability of the resource(s) that could fight the threatened stimuli of this environnement".

9. Conclusions

In our present theoretical research through which we have developed a new stress approach based on a numerical model, we have shown its first efficiency by applying it to some daily stress examples.

The new dimensions PSS (Previous State of Stress) and PS (Positive Stimulus) we have introduced in the model and that have not been taken into account explicitly in the other models, have allowed us to explain stress phenomenon more clearly. These variables have also allowed us to develop a stress formula which has shown its efficiency too by evaluating the intensity of stress and explaining its occurrence and its accumulation.

The RQSI index that we have developed is a variable which gives us an idea of the average amount of stress (positive, negative) a person could receive from each stimulus when encountering a number of stimuli during a period of time. It is an index that we estimate very important and that the future studies could show more its efficiency and its role.

If, with our new numerical model we have studied stress phenomenon more closely by taking into account other dimensions that contribute to its occurrence, future empirical researches however, that could apply it, will tell us more about its efficiency or its limits.

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