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**THE IMPACT OF SELF-AFFIRMATION ON INDIVIDUALS' STRESS LEVELS AND  
PERFORMANCE - A LONGITUDINAL STUDY**

by

**TARANA JHUNJHUNWALA**

**SUBMITTED TO SCRIPPS COLLEGE IN PARTIAL FULFILLMENT OF THE  
DEGREE OF BACHELOR OF ARTS**

**PROFESSOR CATALINO  
PROFESSOR BARTHOLOMEW**

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### **Abstract**

The self-affirmation theory postulates that when an individual is faced with a threat, they have an inherent motivation to affirm the positive beliefs they carry about themselves. (Steele, 1988). The use of these affirmations has been shown to be extremely effective in academic environments, boosting performance in students and also reducing their stress levels. However, there is very little research on the long-term effects of Self-affirmations on performance, and negligible research on its long-term effects on stress. This present study will aim to further understand the immediate effects as well as the longitudinal impact of these affirmations on individuals exposed to a threatening situation. It will make use of a mathematical test as the threatening situation as well as the performance indicator, and a self-report stress measure - the STAI-Y short (Bergua et al, 2012), along with cortisol to analyze stress levels. It hypothesizes that the participants who undergo the self-affirmation intervention will score higher on the mathematical test, will report lower levels of stress, and have lower levels of cortisol than those in the non-affirming condition. Additionally, it anticipates that one month later, when exposed to a similar threatening situation, the previously self-affirmed participants will still perform better on the test, report lower levels of stress and have lower levels of cortisol as compared to the non-affirming participants.

*Keywords* : self-affirmation, stress, performance

**The impact of Self-affirmation on individuals' stress levels and performance - a longitudinal study**

A study conducted by Master et al (2009) found that when people were exposed to a threatening situation where they were made to receive mild electric shocks, those who felt like they had a strong support system experienced less threat, pain, and fear. In another study conducted by Creswell et al (2005), the participants were put in a threatening situation where they had to give a speech in front of an audience. It was found that those who had reflected on their core personal values did not display an increase in the stress hormone cortisol. So, is it really possible to change the outcome of a stressful situation by affirming the optimistic beliefs individuals carry about themselves? Decades of research has shown that a positive self-concept can in fact, have a significant impact on people's performance, stress levels and can make them happier overall (Howell et al, 2016). This study aims to explore the immediate as well as long-term benefits of self-affirmation on stress levels and performance.

The self-affirmation theory (Steele,1988) is one that suggests that human beings have an inherent motivation to affirm the integrity of the self, which are their core personal values, as well as a set of positive beliefs they carry about themselves and their character, known as their self-concept. This practice is especially evident when they are faced with a threatening situation. Additionally, the self-affirmation theory also proposes that individuals can subdue the negative arousal linked with the specific threat by affirming a positive, although an unrelated, aspect of the self (Steele,1988). For example, an individual facing a threat in the workplace can affirm "I am a good parent, child, and sibling" and this will allow them to use valuable aspects of their life to improve their self-concept and face the challenge head on.

There are three key aspects that constitute the process of self-affirmation. 1) when there is a threat to self-regard, there is an inner motivation to “re-establish one’s self-integrity.” (Steele,1988). 2) this motivation is personified in the form of either cognitive/behavioral modifications that directly diminish the psychological threat, or ones that subdue the threat by reaffirming one’s positive sense of self. (For instance, the affirmations can deny the importance of the threat and remind the person of their strengths), and 3) because these affirmations usually are not directly linked to the threat in question, they can utilize areas of the self that are not related to the domain in which the threat occurred. (Howell, 2017). Therefore, self-affirmations can be identified as an extremely flexible approach to surviving and managing stressful situations, since it allows any aspect of the self to be used depending on the experience.

Although there are different methodologies to utilize these affirmations, the most studied method is the Self-affirmation Intervention (Cohen & Sherman, 2014). This intervention is a process used by psychologists to remind people of their cherished values and morals. It is induced in the form of an exercise where individuals are asked to reflect upon and write down their core personal values. Psychologists often use The Valued Living Questionnaire (VLQ) (Hayes, 2004) for this intervention. The VLQ is a self-report measure that affirms the values that are unique and important to us. The areas it examines are Family, Marriage, Parenting and other intimate relationships, Friendship and interpersonal relationships, Professional life, Academic life, Leisure and recreation, Spirituality, Citizenship, and Self-care. The participants then write a short paragraph describing the reason these values are important to them and also about a time in their lives when they were important. Hence, a vital aspect of this intervention is customized to tap into each individuals’ personal valued morals. The self-affirmation intervention is said to “bring about a more expansive view of the self and its resources, weakening the implications of a

threat to personal integrity” (Cohen et al, 2014). It has also been proven that affirmations done at the correct time can improve health, education and relationship outcomes and have effects that last for years. (Cohen et al, 2014).

There are different ways by which self-affirmation protects the individual during times of threat. One vital way is by strengthening the individual’s self-worth. In an experiment conducted by Critcher and Dunning (2015), a group of American undergraduate students were made to fill out a measure that analyzed their overall self-esteem and showcased their current self-concept. Then, they were randomly assigned to either the experimental condition where they underwent the self-affirmation intervention, or the control (non-affirming) condition where they rated their favorite jellybean flavors. Next, they were made to complete a difficult Remote Associates Test (Threat) which induced an experience similar to failure. The participants were finally asked to rate their self-worth and their ability on the test using the same measure of self-esteem that they used in the beginning. The results displayed that the students in the experimental (self-affirming) condition were able to maintain significantly more positive feelings about their self-worth post failure than the students in the control group (no affirmations). Furthermore, it was found that the higher self-worth in the experimental condition was linked to their overall self-esteem rather than their specific abilities on the test (Critcher & Dunning, 2015). These results suggest that reminding ourselves about our beliefs and values as a response to setbacks can promote a sense of assurance and encourage future accomplishments. They also reveal that self-affirmations can be used as buffer when the individual (self) feels threatened (Steele, Spencer, & Lynch, 1993) and is not merely just a positive feeling about oneself. (Steele & Liu, 1983).

Another key way in which self-affirmations work is by functioning as a part of one’s psychological immune system (Sherman & Hartson, 2011), which is the ability of an individual

to safeguard as well as promote mental health.(Gilbert & Wilson, 2001). These affirmations remind people of their several psychosocial resources and allows them to view the threat as separate from themselves (Sherman & Hartson, 2011). Self-affirmation has been found to resolve the friction between self-protection and self-improvement (Sherman & Hartson, 2011) giving people the permission to recognize and accept the reality of the threat and, as a consequence, address the threat assertively. Studies have also found that self-affirmations have the ability to reinforce self-confidence in individuals when they handle future encounters with threatening situations, as well as encourage an openness to challenge. (Cohen & Sherman, 2014) They also help encourage compromise and trust in relationships and remind people of their intrinsic aspirations. (Cohen & Sherman, 2014). Lastly, self-affirmations have the ability to buffer the stress experienced during a threatening situation, improving the individuals' confidence and allowing them to perform better (Creswell et al. 2005). In a study conducted by Martens et al (2006), a group of male and female undergraduate students were randomly made to complete either the self-affirmation intervention, or a control task before they took a math test. The researchers described this test as either diagnostic of their math abilities, which made it threat inducing, or as a test for research purposes, which made it less threatening. The results found that women in the threatening condition performed much worse than the non-threatening condition. However, the affirmed women in the threatening condition performed significantly better than the women in the control condition. (Martens et al, 2006).

Lastly, Self-affirmations work by improving individuals' self-efficacy. Self-efficacy refers to a person's belief in their capacity to execute behaviors necessary to produce specific performance attainments (Bandura, 1977), and it is one of the most frequently studied aspects of Self-affirmations. (Rusk & Waters 2013). In a study conducted by Epton and Harris (2008), a



group of undergraduate students were assigned to either the experimental (self-affirmation) condition where they were asked to write about acts of kindness they had performed in their lives, or to the control condition (non-affirming) where they were asked to write about interpersonal issues they had dealt with. The participants were then exposed to a health message talking about the importance of fruits and vegetables in the prevention of diseases. (Threatening message). Finally, the participants filled out a daily journal where they documented their total consumption of fruits and vegetables over a one-week period. In this, they made ratings of self-efficacy as well as response-efficacy (The person's belief that the recommended behaviors will be effective in reducing or eliminating the perceived threat.) The results indicated that those in the experimental condition ate a significantly larger amount of fruits and vegetables rather than those in the control condition. Additionally, they also reported a higher amount of self-efficacy as well as response-efficacy, showcasing that self-affirmations can lead to behavior change. This is key because having greater self-efficacy can increase the confidence of individuals and allow them to strive to achieve more (Cohen et al., 2006). It is also a crucial aspect of self-enhancement. Additionally, self-affirmations have been shown to have a more significant effect in individuals with lower self-esteem (Creswell et al. 2005) proving that the importance given to the threat along with current feelings of self-worth are a huge factor in the motivation for self-affirmation.

### **Self-affirmations reduce stress levels**

The benefits of practicing self-affirmations are endless. Recently, one of its most researched advantages has been the influence of these affirmations on stress levels. It has been found that self-affirmations can buffer stressful situations and reduce the impact of these situations on the individuals psychological as well as physiological responses. (Sherman &

Cohen,2014). A study conducted by Koole et al. (1999) showed that when self-affirmed, college students had fewer negative thoughts about their past failures. It has also been proven that those individuals that have a better sense of self, tend to have lower basal cortisol levels than those who do not (Seery et al 2004 & Creswell et al 2013). Another study aimed to examine cardiovascular reactivity as well as self-reported affective responses to the practice of self-affirmation. (Chen, et al. 2021).The researchers randomly divided the group into the experimental (self-affirming) and control (non-self-affirming) conditions. After the intervention, they used the International Affective Picture System to induce positive and negative emotion. The results showed that participants had greater high-frequency heart rate variability or HRV. (HRV is an index of the parasympathetic system and increased parasympathetic activity indicates better emotional regulation). They also showed greater respiratory sinus arrhythmia (also showcases better emotional regulation) when practicing self-affirmation. Furthermore, during negative emotion induction, self-affirmation led to a lower maximum heart rate (lower stress and calmer), higher respiratory sinus arrhythmia (better emotional regulation), and lower ratings of negative affect. Additional Studies conducted as follow ups showcased that practicing self-affirmations led to lower amounts of stress and improved performance within individuals (Dutcher et al, 2020). This present study is novel because although there have been several studies that measure stress levels through physiological responses, few have studied the actual self-reported stress perceived by the self-affirmed individuals. Therefore, it tries to understand its effects on stress not only by checking cortisol levels but also adds an additional layer of accuracy by analyzing the stress perceived by these individuals using the self-report measure. I hypothesize that in the face of a threat, self-affirmed individuals will experience less stress than non-self-affirmed individuals. Additionally, there have been several studies to understand the

impact of self-affirmation on immediate stress, but studies aimed to understand its long-term effects on stress are negligible. This paper also aims to find the long-term effects of self-affirmations on stress levels with the use of cortisol levels found in hair follicles that are known to be an indicator of long-term stress levels. I hypothesize that when faced with a threatening situation, individuals exposed to a self-affirmation intervention will experience less stress even one month later as compared to the non-affirmed individuals.

### **Self-affirmations improve performance**

Another important benefit of self-affirmations is its ability to improve the performance of individuals, especially in academic environments. In a study conducted by Creswell et al. (2013), a group of chronically stressed students were first randomly divided into a self-affirmation group or control group and then made to take a Remote associates test (RAT) under time pressure. They found that the self-affirmed students performed significantly better than those students who were in the control or non-affirming condition. Another study found that the self-affirmation intervention (a short writing assignment) was able to improve the performance of African American students and reduced the racial achievement gap by 40%. (Cohen et al, 2006). Furthermore, these affirmations have even been shown to improve performance in the long term. A follow up to the study by Cohen et al (2013) was conducted by Goyer et al (2017), which aimed to find whether these self-affirmation practices had long-term effects on these students. It was found that in one school, this intervention increased the probability of Latino-Americans to enter a college readiness track instead of entering a remedial one around the transition to high school two years later. It was also found that in another school where the intervention had taken place at a much earlier stage, that it increased the college enrollment probability of African American students up to 9 years later. The affirmed students also went to more selective

colleges, thereby showcasing the long-term benefits of these affirmations. (Goyer et al., 2017). These benefits are achieved in numerous ways. First, it pushes students to enter channels that are rich in resources and also support achievement. (Cohen & Garcia, 2014). One study conducted by Dee in 2015, found that these affirmations had a positive effect in those classrooms that provided more opportunities for achievement and growth. Secondly, Self-affirmations have been found not only to improve the grades of students, but also improved their overall performance in the long-term. These students were able to take advanced and more difficult courses in school, and were able to get more abundant opportunities because of their performance, further allowing them to enter better colleges. (Goyer et al (2017). Self-affirmations have also been shown to improve executive performance of powerless individuals and has been found to reduce the “cognitive performance gap between the powerless and the powerful.”(Albalooshi et al). By making us more attentive to the mistakes we make, self-affirmation not only improves our performance but also makes us more receptive to errors that allows us to better correct our mistakes in the long run. (Legault et al). This present study is novel because negligible studies have used timed mathematical tests as the threatening situation or to measure performance levels of individuals. I hypothesize that in the face of a threat (math test), the individuals exposed to a self-affirmation intervention will perform better than the non-affirmed individuals. Additionally, although there have been a few studies that showcase long term benefits of self-affirmation on performance, a great deal of research has to be done in order to get more accurate results. This study aims to identify more examples of the immediate as well as long-term positive influence these affirmations can have on performance levels of students. I hypothesize that in the face of a threat, self-affirmed individuals will perform better even after one month than the non-affirmed individuals.

Thus, this paper aims to understand the important benefits of using these affirmations, especially in workplace and academic environments. By understanding how to use these affirmations efficiently and correctly, teachers and managers can boost productivity and improve the morale of students and employees. Additionally, the stress-free students and employees will be able to perform better and have an improved sense of self-confidence.

Therefore, this study hypothesizes that,

1. In the face of a threat, individuals exposed to the self-affirmation intervention will experience less stress than the non-affirmed individuals.
2. In the face of a threat, individuals exposed to the self-affirmation intervention will experience less stress than the non-affirmed individuals even one month later.
3. In the face of a threat, individuals exposed to the self-affirmation intervention will perform better than the non-affirmed individuals.
4. In the face of a threat, individuals exposed to the self-affirmation intervention will perform better than the non-affirmed students even one month later.

### **Proposed Method**

#### **Participants**

100 undergraduate students will participate in this study. These students, between the ages of 18-22 will be a part of The Claremont colleges and will be of any major. The sample would be half male and half female. Ethics approval will be obtained from the Department of Psychology at Scripps College before recruitment will begin. The participants will be recruited anonymously through a survey sent to all the colleges, to get as diverse of a sample as possible. The entire sample will be randomly divided into two groups – experimental (self-affirmation) and control and the students will be offered USD \$10 as compensation for their time.

## Materials

### Self-affirmation intervention

*The Valued Living Questionnaire (VLQ)* (Hayes, 2004; Hayes, Strosahl, & Wilson, 1999) is a self-report measure that affirms the values that are unique and important to us. (See Appendix A) The areas it examines are: Family, Marriage, Parenting and other intimate relationships, Friendship and interpersonal relationships, Professional life, Academic life, Leisure and recreation, Spirituality, Citizenship, and Self-care. All these responses are scored on a 10-point scale where *1 is not at all important and 10 is extremely important*. It also explores how these values have influenced our actions in the recent past. All these responses are also scored on a 10-point scale where *1 is not at all consistent with my value and 10 is completely consistent with my value*, which demonstrates how important certain values are to us.

### Threatening situation and performance indicator :

**Math test** : To induce stress and to measure performance, every participant will be made to complete a timed math problem set created on Qualtrics, consisting of 15 Math problems including basic addition, subtraction, multiplication and division. Examples of the math problems given would be  $15 \times 7 + 3$ ,  $8 + 4 \times 2$ ,  $9 / 3 \times 6 + 7$ , etc. (See Appendix B). All participants will get 15 seconds to answer each question and will be graded based on the number of questions they get correct. Using timed math problems would be an efficient threat because it has been found that putting students through math stress can impede their working memory, which is where we hold math facts. (Beilock et al, 2011) It has also been found that these “stressful math situations cause worries that compete for the working memory, causing it to be blocked.” (Beilock et al, 2011). Finally, the level of math anxiety caused by the timed tests is found to be constant for students of all ages, and could potentially hamper their achievement.

Therefore, using these timed math problems would be an effective threatening situation for the participants.

**Stress level indicators :**

1. ***Salivary Cortisol and Hair Cortisol Concentration*** : Cortisol is a steroid produced by the adrenal glands in our body. When our brain is exposed to a threatening situation, it releases a hormone called adrenocorticotrophic hormone which triggers our adrenal glands to secrete cortisol which gives us immediate energy. Cortisol is released in our bodies as a result of our fight or flight response. This steroid is a necessary tool for our survival. Once the threat passes, our bodies naturally bring the cortisol levels back down to baseline. However, when stressors such as academic and work pressures are constantly present, cortisol levels do not come back down at all. Salivary cortisol has been used in various studies to accurately understand current stress levels of individuals, and has been proven to be a clear indicator of it. (Cozma et al. (2017, Cordero et al. 2014) , Additionally, Cortisol levels found in hair follicles has recently become a widely used tool for understanding long-term stress levels. (Staufenbiel et al. 2013). Cortisol has been shown to be an accurate indicator of stress levels and its ease of collection as well as its wide scope of application make it a perfect tool for the current study. (Bozovic,Racic,&Ivkovic,2013).
2. ***The STAI-Y short*** (Bergua et al, 2012) or the State-Trait anxiety inventory is a 10-item version of the original 40 item STAI-Y scale. (See Appendix C) This scale assesses current stress and anxiety levels on a 4-point scale, *Not at all so, somewhat, moderately so, and Very much so*. This scale was created to screen anxiety and stress within elderly

populations and was found to have similar results and have the same factorial structure as the full scale.

### **Procedure**

The participants will be randomly divided into two groups (experimental and control) using a random name generator. These participants will then be taken into two separate rooms, where they will be asked to fill out a consent form. After, their salivary cortisol as well as hair cortisol concentration will be measured, and they will be made to fill out the STAI-Y short scale to check stress levels prior to the threatening situation (timed math test). Next, the experimental group will be taken through the self-affirmation intervention where they will fill out the Valued Living questionnaire (VLQ) while the control group will directly take the math test. Once the test is over, the saliva and hair sample of the control group will be retaken for assessment of cortisol levels, after which they will be made to complete the STAI-Y short scale. After the intervention, the self-affirmed group will take the math test as well and will go through the same procedure of stress-assessment. Finally, they will be debriefed about the study. Once this is all complete, the participants will be paid \$10 as compensation for their time. After a month, the same participants will be asked to return. However, this time, the experimental group does not go through the self-affirmation intervention again. Both groups take the math test (with different questions of the same difficulty level) again at the same time in different rooms, after which they will be asked to go through the same stress-assessment of a saliva swab, hair sample, and completion of the STAI-Y short scale and will be debriefed once again.

### **Ethical Considerations**

The study I am proposing focuses on understanding the impact of self-affirmations on long-term stress levels as well as performance. Since this study is focuses on understanding the



impact of self-affirmations on long-term stress levels as well as performance, it would be crucial to society because it will provide them with efficient tools to deal with stressful situations as well as how to make the most out of these situations. Whether it is teachers in schools or parents of underperforming, stressed children, my study could be an important resource as a way to understand and reap the benefits of self-affirmation. Additionally, It would also benefit the participants because the participants will be able to see changes in their own performance and confidence which could potentially lead to more achievements in the future. Although my study will focus on students, it could be used universally by anyone. My study will require the participants to first, go through a self-affirmation intervention where they will be identifying their core moral values. This task is very low-risk. Next, the participants would be put through a low-level stressful task where they would be asked to complete a timed math problem set, this again, is a very low-risk task and would not put the participants in any sort of danger. Lastly, their performance levels and stress levels will be checked. Since it is a longitudinal study, they will be assessed after one month to check their performance and stress levels again. All of these aspects of the study are very low-risk and do not cause any harm to the participants. My study will not require the participants to disclose any sensitive personal information, and all the participants will be debriefed before the study as well during their yearly assessments, making it a low-risk study. The data in this study would be completely anonymous - participants will not be asked their names during the stressful task. During the stress assessment, the professionals conducting checks will be asked not to disclose any information about the participants to the researcher. The level of risk in my study is extremely minimal since the participants will not be doing anything that may cause them any sort of harm, and the study would be completely voluntary since it would be conducted on students in high school who will be able to consent to

the study themselves. Additionally, I will not be required to recruit vulnerable or protected populations, neither will I be recruiting children who will not be able to consent to this study themselves. All the participants of the study will be completely debriefed and will not be deceived in any way. The only aspect of the study that they will not be told about is what exactly the study seeks to investigate - since knowledge of the use of self-affirmation practices could reduce its benefits, the students will not be told that the self-affirmations can have an impact on their performance or stress levels. However, they will be fully debriefed on self-affirmations, and what the study will entail.

### **Anticipated Results**

**Data Analysis Strategy :** There are two parts to my strategy. The first would be to assess the relationship between the Self-affirmation intervention and the Performance of the students in the math test. For this, I will be using an independent sample T-test. Here, the Independent variable would be the self-affirmation intervention/control condition and the dependent variable would be the performance on the test taken on the same day. I will be using the same method one month later to check the performance of the individuals in the long-term.

Second, to predict the relationship between the Self-affirmation intervention and immediate stress levels, I will be measuring the stress levels of students using Salivary cortisol levels, as well as the changes in the STAI-Y scale scores. Here, I will use an independent sample T-test, where the independent variable will be the self-affirmation or control condition and the dependent variable will be the cortisol levels. I will also run another independent sample T-test here where the independent variable will be the self-affirmation or control condition and the dependent variable will be the result on the STAI-Y short scale. I will use the same methods one month later to check for long term effects. Finally, I will also run an independent samples T-test

to measure long-term stress levels where the independent variable would be the self-affirmation or control condition and the dependent variable would be the hair cortisol levels.

Hypothesis 1 Prediction : My prediction is that in the face of a threatening situation, the individuals exposed to the self-affirmation intervention will experience less stress. This is because self-affirmations have been shown to help individuals see the stressors of their daily lives from a broader perspective, and focus on the “Big-picture”(Wakslak and Trope, 2009), therefore causing the threatening situation to require less cautiousness and vigilance.(Harber et al, 2011). Because the situation is no longer as threatening as it was, it has a much smaller impact on their psychological well-being as well. (Cohen et al. 2009). The study conducted by Koole et al. (1999) showed that when self-affirmed, college students had fewer negative thoughts about their past failures. It has also been proven that those individuals that have a better sense of self tend to have lower basal cortisol levels than those who do not. (Seery et al. and Creswell et al). Therefore, I anticipate that self-affirmed individuals will experience less stress than the non-affirmed individuals.

Hypothesis 2 Prediction : I believe that in the face of a stressor, people exposed to self-affirmations a month ago will experience less stress. This is because self-affirmation has been shown to be able to buffer the nervous systems responses to stressors, (Sherman et al, 2011). Since affirmations can prevent the increase of the stress hormones by reaffirming the positive beliefs people have about themselves (Creswell et al), I believe that reminding themselves of these affirmations in the future would also allow them to be less stressed about the task at hand. Self-affirmations have a significant positive impact of self-efficacy (Rusk & Walters 2013) thereby promoting behavior change. It also strengthens the self-worth in individuals (Critcher and Dunning 2015), which will allow them to remember their strengths thereby reducing their

stress levels long term. Finally, since self-affirmations have been proven to improve performance over time by boosting confidence of the individuals, it can be hypothesized that in the long run, these individuals also feel less stressed because of this increased confidence.

Hypothesis 3 prediction : In the face of a threatening situation, self-affirmed individuals will perform better. This is because self-affirmations have been found to reinforce self-confidence in individuals when they handle future encounters with threatening situations as well as encourage an openness to challenge (Cohen and Sherman 2014). Chronic stress can have a significant impact on the performance of individuals and these affirmations have been shown to boost performance in underperforming individuals (Creswell et al.) Self-affirmations have also been shown to improve executive performance of powerless individuals and has been found to reduce the “cognitive performance gap between the powerless and the powerful.”(Albalooshi et al). The study conducted by Martens et al. showed that when women under stereotype threat used self-affirmations, they performed at levels comparable to men and to women who were not under stereotype threat. Self-affirmations have also been shown to improve Self-efficacy, giving them an increased sense of confidence, and allowing them to perform better in important life events like job interviews(Latham & Budworth, 2006). By making us more attentive to the mistakes we make, self-affirmation not only improves our performance but also makes us more receptive to errors that allows us to better correct our mistakes in the long run. (Legault et al, 2012).

Hypothesis 4 prediction : I anticipate that the self-affirmed individuals will perform better even one month later because self-affirmations have also been shown to improve performance in the long run. Cohen et al. (2006) showed that a Self-affirmation intervention was able to improve performance of African-American students and reduce the racial achievement gap by 40%. In

fact, these affirmations prevented the declining trend of performance that these students had the tendency to show across the academic year, and was extremely beneficial for the low performing students. Self-affirmations have also been shown to reduce achievement gaps between threatened students (social class, gender stereotypes, people of color) and their non-threatened peers for up to 7 years (Goyer et al. 2017). By performing better, these students feel more confident and affirmed and thus continue to perform better (Cohen et al. 2009). Additionally, their better performance causes the teachers to have higher expectations from them, and this increased demand allows them to keep performing well. (Cohen and Sherman,2014).

### **Scholarly Merit and Broader Impact**

Although there is abundant research on the concept of Self-affirmation, there is not nearly enough research on its impact on performance and stress levels, especially in academic environments. Additionally, there are even fewer studies that research the long-term impacts of these affirmations, with almost no studies on its long-term effects on stress. The current study will aim to fill the gaps in the present research by delving into the short and long-term effects of self-affirmations on academic performance and stress. By including the use of a self-reported stress scale and hair cortisol levels, it will add an additional layer of accuracy in understanding the benefits of this theory. Investigating this theory thoroughly can allow researchers to find even more benefits and uses of these affirmations that can be used by individuals to improve their lives. This research is also crucial because it could potentially become an integral part of the curriculum at every academic institution and can significantly reduce the rate of burnout among students, especially in rigorous institutions. It can also become an effective way to promote self-confidence in students that can push them to explore previously daunting trajectories and can allow them to follow their ambitions without fear. It can improve motivation in students that will

further boost their productivity and will make them more resilient overall. Additionally, it can become an effective intervention used by therapists to increase feelings of self-worth and confidence in their clients and also by team managers to boost employee morale, increase productivity and improve performance in the workplace. Self-affirmation can become a non-invasive way to reduce anxiety in people and can also become an effective method to increase the self-competence of individuals with low confidence levels. As mentioned earlier, the use of self-affirmations improved performance in African-American students and Latino students by over 40%. This type of improvement can reduce the racial achievement gap and can increase motivation in minority communities which in turn can reduce poverty, improve opportunities, increase income and even lower drug use and crime rates. Another study showed improved performance in self-affirmed women. Self-affirmations can reinforce confidence in women giving them the courage to strive for more and protecting them from stereotype threats. The use of these affirmations in early stages of their lives can boost motivation and morale and could increase the number of women in the workforce especially in higher positions. The benefits of self-affirmations are endless and if studied more in depth, it can become an efficient and accessible way to improve the lives of people.

### **Conclusion**

In conclusion, I believe that the practice of self-affirmation can help change the lives of numerous people. Deeper investigation of this concept can allow it to become an alternative approach to reduce stress and anxiety among individuals who cannot use traditional medicine, as well as boost productivity and performance in underperforming students and workers. Self-affirmations are an incredible way to improve our self-concept and further research is needed in order to find its other potential benefits.

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## APPENDIX A

### The Valued Living Questionnaire

Below are domains of life that contain values for some people. We are concerned with your quality of life in each of these areas. One aspect of quality of life involves the importance one puts on different areas of living. Rate the importance of each area (by circling a number) on a scale of 1-10. 1 means that area is not at all important. 10 means that area is very important. Not everyone will have notable values all of these areas, or care about all areas the same. Rate each area according to your own personal sense of importance.

1. Family (other than marriage or parenting) 1 2 3 4 5 6 7 8 9 10
2. Marriage/couples/intimate relations 1 2 3 4 5 6 7 8 9 10
3. Parenting 1 2 3 4 5 6 7 8 9 10
4. Friends/social life 1 2 3 4 5 6 7 8 9 10
5. Work 1 2 3 4 5 6 7 8 9 10
6. Education/training 1 2 3 4 5 6 7 8 9 10
7. Recreation/fun 1 2 3 4 5 6 7 8 9 10
8. Spirituality 1 2 3 4 5 6 7 8 9 10
9. Citizenship/Community Life 1 2 3 4 5 6 7 8 9 10
10. Physical self care (diet, exercise, sleep) 1 2 3 4 5 6 7 8 9 10
11. Environmental Issues 1 2 3 4 5 6 7 8 9 10
12. Art, creative expression, and aesthetics 1 2 3 4 5 6 7 8 9 10

In this section, we would like you to give a rating of how consistent your actions have been with your values in each of these domains. We are not asking about your ideal in each area. We are also not asking what others think of you. Everyone does better in some areas than others.

People also do better at some times than at others. We want to know how you think you have been doing during the past week. Rate each area (by circling a number) on a scale of 1-10. 1 means that your actions have been completely inconsistent with your values in this area. 10 means that your actions have been completely consistent with your values.

1. Family (other than marriage or parenting) 1 2 3 4 5 6 7 8 9 10
2. Marriage/couples/intimate relations 1 2 3 4 5 6 7 8 9 10
3. Parenting 1 2 3 4 5 6 7 8 9 10
4. Friends/social life 1 2 3 4 5 6 7 8 9 10
5. Work 1 2 3 4 5 6 7 8 9 10
6. Education/training 1 2 3 4 5 6 7 8 9 10
7. Recreation/fun 1 2 3 4 5 6 7 8 9 10
8. Spirituality 1 2 3 4 5 6 7 8 9 10
9. Citizenship/Community Life 1 2 3 4 5 6 7 8 9 10
10. Physical self-care (diet, exercise, sleep) 1 2 3 4 5 6 7 8 9 10
11. Environmental Issues 1 2 3 4 5 6 7 8 9 10
12. Art, creative expression, and aesthetics 1 2 3 4 5 6 7 8 9 10

## APPENDIX B

### Sample Math Test :

For this math test, you will be asked 15 questions and will have 15 seconds to complete each one. If you are unable to answer within this time period, the screen will automatically move to the next question. Best of luck!

1.  $15 \times 7 + 3$

2.  $12 \times 3 + 63$
3.  $8 + 3 \times 2 + 7$
4.  $48 / 12 + 13 \times 3$
5.  $17 \times 4 - 5 \times 3$
6.  $19 \times 5 + 12$
7.  $23 \times 4 - 5 + 2$
8.  $14 \times 5 + 7 - 1$
9.  $36 \times 4 + 9$
10.  $43 \times 2 + 5 - 2 \times 2$
11.  $73 - 24 + 5 \times 6$
12.  $97 - 78 + 15 \times 3$
13.  $43 \times 3 + 2$
14.  $18 \times 4 - 5 + 3$
15.  $20 \times 3 + 8 - 4 \times 2$

## APPENDIX C

### STAI-Y SHORT SCALE

**What Answer best describes the intensity of your feelings right now?**

1. I am tense 1 (Not at all so) 2 (Somewhat) 3 (Moderately so) 4 (Very much so)
2. I feel at ease 1 (Not at all so) 2 (Somewhat) 3 (Moderately so) 4 (Very much so)
3. I feel upset 1 (Not at all so) 2 (Somewhat) 3 (Moderately so) 4 (Very much so)
4. I feel satisfied 1 (Not at all so) 2 (Somewhat) 3 (Moderately so) 4 (Very much so)
5. I feel comfortable 1 (Not at all so) 2 (Somewhat) 3 (Moderately so) 4 (Very much so)

6. I feel nervous 1 (Not at all so) 2 (Somewhat) 3 (Moderately so) 4 (Very much so)
7. I am relaxed 1 (Not at all so) 2 (Somewhat) 3 (Moderately so) 4 (Very much so)
8. I feel content 1 (Not at all so) 2 (Somewhat) 3 (Moderately so) 4 (Very much so)
9. I am worried 1 (Not at all so) 2 (Somewhat) 3 (Moderately so) 4 (Very much so)
10. I feel confused 1 (Not at all so) 2 (Somewhat) 3 (Moderately so) 4 (Very much so)