The Effects of Positive Affect and Verbal Encouragement on Success

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Abstract

Ample research shows evidence that high positive affect is advantageous for people in many aspects of life. They benefit more in the work place, in social situations, and even prove to be mentally and physically healthier than those with low positive affect. I investigated the effects of positive affect on success during a given task that involved picking up paper clips with an impaired hand and placing them into a container. Their goal was to get as many paper clips into the container. I also surveyed students to measure their affect. In addition, I provided half of the participants with verbal encouragement during the task, while the other half did not receive the encouragement. I predicted that the participants with higher positive affect and who received verbal encouragement would be able to get more paper clips in the container than those with lower positive affect and who did not receive any verbal encouragement. My results did not support my hypothesis; I found that there were no significant effects of positive affect or verbal encouragement. Possible factors that could have contributed to the results include a small sample size, weather, and participant individual differences.

The Effects of Positive Affect and Verbal Encouragement on Success

Seligman and Csikszentmihalyi (2000) define positive psychology in terms of well-being, contentment, hope, and optimism for the future, as well as satisfaction and happiness in the present. “Positive psychology promises to improve the quality of life and prevent pathologies that arise when life is barren and meaningless” (Seligman & Csikszentmihalyi, 2000, p. 5). Although researchers agree that not much is known about the field of positive psychology, it would be hard to disagree with the notion that its components are essential to one’s success in life. Furthermore, aspects of positive psychology, including positive experiences, positive traits, and positive relationships, are potentially essential in the lives of people with physical or mental disabilities. Because these components are necessary for people to succeed, it is important to first define success for people living with disabilities. Success would simply be overcoming impairments to achieve the highest level of functioning needed to live independently. Patients receiving occupational therapy, specifically, must overcome disabilities such as stroke, cerebral palsy, and arthritis. As cited by Rogers (2005), the World Federation of Occupational Therapists defines occupational therapy as a profession concerned with promoting health and well being by enabling people to participate in the activities of everyday life. In all of these cases, the impairments are life-long, which means that the patients must work every single day to achieve higher levels of functioning in order to carry out the activities of everyday life, or activities of daily living (ADL). Activities of daily living include basic activities of hygiene and personal care. Patients’ success is dependent on more than physical exercises. After considering research on positive psychology and its components, I believe that these patients need to have a positive mindset, including positive reactions to therapy, in order to overcome their disabilities and succeed. This component of positive psychology is positive affect.

Positive Affect

Affect refers to the experience of feeling or emotion and is a key part of someone's interaction with others. Positive affect, in particular, is conceptualized as feelings of happiness, joy, contentment, and enthusiasm (e.g., Berges, Seale & Ostir, 2011). In numerous studies, Steptoe, Dockray, and Wardle (2009) provide support for the effects of positive affect on biological processes and personality traits. First, the authors discuss positive affect in relation to biology. In one of their studies, the researchers administered the flu virus and the cold virus to volunteers and then monitored them in quarantine. Results showed that participants with a more positive emotional style had reduced risk of developing upper respiratory illness. In another study done by Steptoe et al. (2009), a cohort of 6,025 men and women who did not have coronary heart disease (CHD) was followed over 15 years. Approximately 1000 people developed CHD, but participants with greater emotional vitality (sense of energy, positive well-being, self-control) were at reduced risk for CHD. The researchers also investigated psychological well-being and mortality and found that positive affect and positive traits such as optimism were associated with reduced mortality.

Steptoe et al. (2009) also detected four possibilities to understanding what mediates the effects of positive affect on health. The first possibility is that positive affect is a common genetic substrate, meaning it is moderately heritable. Second, lifestyle factors are responsible for positive affect. The third possibility is that positive affect is related to psychobiological activation and variation amongst biological pathways in the body. The last possibility is that positive affect could be a marker of a set of psychosocial factors. The researchers also studied psychological well-being and health behaviors in relation to positive affect. They carried out a

study of the relationship between health behaviors and life satisfaction. They found that greater life satisfaction was associated with being less likely to smoke as well as more likely to exercise.

Multiple related studies of Steptoe et al. (2009) show how positive affect correlates to biological factors in the body. A number of studies have shown that cortisol, a stress hormone involved in a range of chronic diseases, tends to be lower when people have greater positive affect. In a study of middle-aged adults, men with higher levels of positive affect had a lower heart rate over the day. In addition, systolic blood pressure was inversely related to positive affect. Further studies have shown that rapid recovery from a stressful experience has been built upon high levels of positive affect. Using power spectrum analysis, Steptoe et al. (2009) found that greater positive affect was related with healthier heart rate variability. There is evidence from lab studies that suggests that positive well-being contributes to a quick cardiovascular recovery profile after experiencing negative emotions.

Researchers recently reviewed the relationship between immune function and positive affect finding that positive affect was associated with heightened antibody responses. In the authors' (Steptoe et al., 2009) study of middle-aged adults, they found an inverse correlation between positive affect and plasma IL-6 and C-reactive protein concentration in women. IL-6 and C-reactive proteins are related to chronic stress, social isolation, and childhood adversity. In another one of Steptoe's (2009) studies, results show an inverse association between positive affect and fibrinogen stress responsivity. Fibrinogen is a precursor to fibrin, which is relevant to cardiovascular disease through its influence on blood viscosity. Fibrinogen responds rapidly to mental stress. The inverse association shows that smaller stress responses were found in happier individuals. Positive affect is also related to sleep, with studies suggesting that positive affect is associated with good sleep in the general population (Steptoe et al., 2009).

Steptoe et al. (2009) go on to discuss other factors positively related to positive affect such as resilience, social support, personality, optimism, and coping strategies. In the conclusion the authors note that results are complex but prove to be good evidence that positive affect is a predictor of health outcomes and possibly associated with positive health behaviors, as well as health-protective biological responses. The authors suggest further research to determine if techniques to enhance positive affect would be beneficial for people biologically and behaviorally.

Berges, Seal and Ostir (2011) studied positive affect and pain ratings in stroke patients. Those who report pain post stroke typically have poorer recovery and experience higher health care costs. They also report low satisfaction with personal and working life, and report decreased overall quality of life. Berges et al. collected data from 917 adults with stroke who received rehabilitation in 2005. Participants completed information on positive affect and pain ratings at discharge and at a three-month follow-up. Pain was rated on an 11-point scale widely used in clinical studies. A 4-item scale was used to measure positive affect. Findings indicated that high positive affect at discharge was significantly associated with lower pain ratings at three months post discharge. This is evidence that mind-body connections and high positive affect are linked to physical and functional processes of recovery. Positive affect may play a key role in the recovery process and is relevant to inpatient medical rehabilitation and its goal to improve the quality of life.

In addition to lower pain ratings, positive affect improves functioning post hospitalization (Fredman et al., 2008). Fredman et al. studied the influence of positive affect on physical health in elderly adults. They specifically examined whether positive emotion influences functional status and community participation after being hospitalized. During a longitudinal study, they

used 134 persons 65 years of age or older who had been admitted to the Acute Care for Elders unit. Researchers collected data during the hospital stay and then three months after discharge. Fredman et al. (2008) found that high positive emotion score was significantly associated with maintaining or improving Activities of Daily Living (ADL) function at the three month follow-up. High positive affect also significantly associated with increased community participation. From these results Fredman et al. conclude that positive emotion is associated with maintaining independence post hospitalization. This article is especially relevant to the current study, because I am interested in the effects of positive affect on physical components during and after rehabilitation.

Bindl, Parker, and Hagger-Johnson (2012) studied the relationship between affect and proactivity. Proactivity's focus is on self-starting and anticipatory and change-oriented action. Bindl et al. extend their focus to study proactivity as a goal-regulatory process including the components: envisioning, planning, and reflecting. They hypothesized that positive mood would be positively correlated with each component of proactivity. In their first study, they had employees complete online questionnaires during work hours. They measured trait positive and trait negative affectivity, the employees' belief in their own competency, affective organizational commitment, mood, and proactive goal regulation. They initially developed 29 items to assess envisioning, planning, and reflecting. Their results supported their hypothesis that high-activated mood would be positively correlated with all the components of proactivity. People who have high-activated positive affect have elevated states of readiness for action or energy expenditure. They have the highest motivational intensity (Bindl et al., 2012).

In another study, Bindl et al. (2012) measured study-related affect and proactivity at the onset of University education using undergraduate students. They measured positive and

negative affectivity, perceived course performance, mood, and proactive goal regulation. In the results they found that positive mood was positively associated with levels of proactive goal regulation. Also, perceived course performance was positively related with both positive mood and proactive goal regulation. All of their results supported the notion that high-activated positive mood (feelings of being inspired, energized and enthused) was a consistent predictor of all three elements of proactive goal regulation.

Verbal Encouragement

Affect refers to the experience of feeling or emotion and is a key part of the process of a person's interaction with stimuli. In an environment where a patient is receiving therapy, the therapist is the main stimulus; therefore, it is important that the therapist tries to produce positive emotions within the patient during their daily interactions. If positive mood is positively correlated with proactive goal regulation as well as health benefits, then how can the therapist instigate a good mood? Verbal encouragement can be used as a tool to increase positive affect; hence, increase success.

There are pathways in the brain that have been identified between the components of the auditory system and the motor system. McNair, Depledge, and Stanley (1996), examined the effects of verbal encouragement on the peak force generated by elbow flexors. They also measured the EMG (electromyographic) activity from these muscles. They had healthy subjects perform two sets of three maximum effort isometric contractions of the elbow flexors while sitting and stabilized by straps. The researcher with the subjects would provide verbal encouragement such as, "Come on, you can do it" in a slightly louder volume than regular. The verbal encouragement was only provided in one set of contractions. The highest peak force was measured across three trials. The EMG activity was chosen to represent the muscle activity from

the elbow flexors. They found a significant increase in the peak torque recorded when verbal encouragement was present. McNair et al. (1996) discuss that their later work has shown that techniques using self-efficacy statements, visualization, and imagery can influence performance. No change in the EMG activity was observed in their study. McNair et al. (1996) conclude that motivation is an essential aspect of training and exercise therapy.

In a related study (Guyatt et al., 1984), researchers studied the effect of encouragement on participants completing walking tests. Forty-three patients with chronic airflow limitation or chronic heart failure performed two and six minute walks every night for ten weeks. Some received encouragement as they performed, and some did not. Results showed that simple encouragement improved performance. The magnitude of the effect was closely related to the effect in other studies where participants were shown different therapeutic maneuvers (Guyatt et al., 1984).

Karaba, Popadic-Gacesa, Grujik, Barak, and Droupsin (2007) did a study on the effects of verbal encouragement on anaerobic abilities. They took 30 young men who were not involved in any sports activities and gave each a Wingate anaerobic test, which assesses anaerobic activities. They gave the test without encouragement and then with encouragement. Three parameters of anaerobic abilities were recorded: anaerobic power, anaerobic capacity, and explosive power. The changes when the test was performed with verbal encouragement were recorded. Karaba et al. found that there was a statistically significant increase in values of all parameters expect for relative explosive power when given verbal encouragement. The researchers concluded that it is crucial to achieve high levels of motivation from verbal encouragement, so the individuals' results can reflect their real maximum.

In another related study, Jung and Hallbeck (1999) studied the effects of verbal encouragement on static handgrip strength, which is defined as being the maximal force a muscle or group of muscles can exert against an immovable object. They took 16 male subjects and measured handgrip strength in each of their dominant hands. A dynamometer was used for measuring the strength. After the researchers gave the subjects instructions, the experimenter sitting next to the subject continuously and loudly shouted, "Go." Peak force and mean force were acquired from each trial. They found that using verbal encouragement increased mean maximum force by about 5% more than non-use.

The Current Study

In the current study, I will be measuring college students' success during a given task to see if there is an interaction between success rate and positive affect scores. The task involves picking up paper clips and putting them into a container, and success refers to how many paper clips they get into the container. I will also be measuring the effects of verbal encouragement on their success. In order to relate the study to occupational therapy, the students will have their dominant hands bound to simulate common impairments found in patients receiving therapy. In addition, I will be recording how many errors the students make while carrying out the task.

I hypothesize that students who have higher positive affect scores and receive verbal encouragement during their task will have the highest success rates and the lowest error rates. To test this, I will be giving a questionnaire to students in order to measure their affect during the previous week. I will give them a task to complete in a certain amount of time. The task involves picking up paper clips with their impaired hand. Some will receive positive encouragement, while others will not. I predict that there will be a positive correlation between positive affect scores and success, as well as a positive correlation between verbal encouragement and success.

Method

Particpants

For my experiment, I used 48 students from a mid-sized four-year university located in the Midwest. The participants were required to be at least 18 years of age. Participants' ages ranged from 18 to 54, 24 being the average age. To select my participants, I asked several professors if I could recruit their students in some of their classes. Students were offered extra credit at the instructors' discretion. In addition, I had a sign-up sheet posted outside of the psychology office with a description of my study and time slots for interested individuals to make appointments.

Research Design and Materials

My experiment required only one room for testing. I had two tables: on one table I had the informed consent forms and the surveys. The informed consent form described what the participants would be doing during the experiment and how long it would take. It also warned subjects that the binding of their hands was not meant to be painful, but could cause mild discomfort. (See Appendix A for informed consent form.) The survey, The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) included 20 items, which measured participants' affect during the previous week. (See Appendix B for survey.) I numbered the surveys in the top right corner and highlighted the number in either pink or green. Pink coded for verbal encouragement while green coded for no verbal encouragement. On the other table I had one hundred medium-sized paper clips scattered on the table with none overlapping another. I had an open container placed on either side of the scattered paper clips, where the participants were to put the paper clips after picking them up. At this table, I also had a notepad, which I used to record each participant's error rate and success rate, and the materials used to bind the

participants' hand. These materials included Scotch Tape, rubber gloves, and rubber bands. Lastly, I had my mobile phone on the table to be used for a timer. I had two conditions in my experiment: in condition 1, the participants received verbal encouragement during the task; in condition 2, they did not receive encouragement. My experiment was a between subjects design; therefore, each participant experienced only one condition.

Procedure

When the participants arrived, I directed them to sit down at the table with the informed consent forms and surveys. I gave them each two forms for them to read and sign. As they were reading the forms, I briefly explained to them what they would be doing. Afterward, I gave them the survey from the top of the stack. I coded the surveys in an "every-other" order so I had no control over which condition the participants were in. This way the order would be randomized. After participants finished the survey, I had them sit down at the table with the paper clips. I would sit across from them, where I would first explain the task. They had one minute to put as many paper clips into the container as possible. They had to pick up one paper clip at a time, and they had to pick the paper clips directly off of the table's surface rather than sliding them off of the edge of the table. They were also to go as fast as they could while trying not to drop any.

Before beginning the task, I bound each participant's dominant hand using the glove, rubber bands, and scotch tape. I did this to simulate common impairments found amongst typical patients receiving occupational therapy. First, I had them put on the rubber glove, in order to decrease tactile sensitivity. In approximately half of people suffering with Cerebral Palsy, sensibility of the hands is impaired (Odding, Roebroeck, & Stam, 2006, p. 189). I had the participants straighten their fingers; I then taped them together at the second knuckles. This was to impair digit individuation. Hand function requires relatively independent control of individual

digits to perform various fine motor tasks, (Raghavan, 2007), such as the one given in the current study Raghavan states that in stroke patients, the ability to produce independent digit movements remains quite impaired. Lastly, I had participants put their thumbs into their palms as if making the sign for the number four. I put a thick rubber band around their hand to hold the thumb in that particular position. This was to simulate a common impairment found in children with cerebral palsy. In the upper extremity of the typical pattern of spastic joint deformity includes thumb-in-palm deformity. The thumb held flexed inside the palm impairs grip and grasp, as well as lack of abduction and extension, which limits the size of the object the patient can grasp (Bhardwaj & Sabapathy, 2011). The participants were to use only the impaired hand to pick up paper clips. They could use their non-dominant hand only to hold the container if they so wished. After explaining the instructions and binding their hands, I said, "Ready. Set. Go.", and started the timer.

For all participants, I counted down the time when they had 30 seconds remaining and 10 seconds remaining. For the subjects in condition 1, I would give subtle verbal encouragement throughout the task. I used phrases such as, "You're doing an awesome job" or "Keep it up. You're doing very well" three to four times during the 60 seconds. For the subjects in condition 2, I would only count down the time. During the task, I would record on a notepad how many times the participant dropped a paper clip. After the one minute, I told the participants to stop, and proceeded to remove the materials from their hands. I counted how many paper clips they put into the container and recorded the number on the same piece of paper where I recorded their errors. The participants were made aware of their scores if they asked for them. I then stapled the piece of paper to the corresponding survey so I would not get records confused. Finally, I debriefed the participants and relieved them from my study.

Results

To study the effects of positive affect and verbal encouragement on success, I performed a 2 x 3 (verbal encouragement x positive affect) between-subjects factorial ANOVA. There were three groups for positive affect: high PA (scores 40 to 50), medium PA (scores 34-39), and low PA (scores 20-33). The individuals' success rate, (the number of paper clips they each got into the container), and error rate, (how many times each participant dropped a paper clip), were my two dependent variables.

The possible range of scores for positive affect was from 10 to 50. The actual range of scores was from 20 to 50. The possible number of paper clips participants could put into the container ranged from 0 to 100. The actual range was from 14 to 40. There was no main effect of verbal encouragement on success, $F(1,42) = 1.08$, $p = .305$; the number of paperclips picked up by the encouragement group (M=25.0, SD=5.66) did not differ significantly from the number picked up by the non-encouragement group (M=21.9, SD=5.44). There was no main effect of positive affect on success, $F(2,42) = .732$, $p = .487$; the number of paperclips picked up by the high positive affect group (M= 24.2, SD= 6.04) did not differ significantly from the number picked up by the low positive affect group (M= 23.0, SD= 5.39). There was no significant interaction between verbal encouragement and success, $F(2,42) = .025$, $p = .975$. (See Figure 1.)

In regards to my second dependent variable, there was no main effect of verbal encouragement on error rates, $F(1,42) = 2.10$, $p = .155$; the number of errors made by the encouragement group (M= .625, SD= .711) did not differ significantly from the number of errors made by the non-encouragement group (M= 1.00, SD= 1.25). There was no main effect of positive affect on error rates, $F(2,42) = .908$, $p = .411$; the number of errors made by the high positive affect group (M= .938,SD= 1.06) did not differ significantly from the number of errors

made by the low positive affect group (M= 1.00, SD= 1.04). Results yielded no significant interaction between verbal encouragement and positive affect, $F(2,42) = .142$, $p = .868$. (See Figure 2.)

Discussion

Possible Explanations for Results

My results did not reveal significant effects of positive affect or verbal encouragement on success. There are many reasons to explain my results. First of all, the survey measuring positive affect asked participants how they felt the "past week". The first day I did my experiment was the Monday after Spring Break. Because the week during Spring Break is not a typical week in the lives of students, their affect scores could have been different from what they normally are. It also rained the whole week of Spring Break, which could have affected the participants' moods negatively.

Individual differences could have largely contributed to my results. I must take into account the fact that introverted individuals react differently in social situations than extroverted individuals. In regards to the effects of verbal encouragement, most of my participants had never met me before taking part in my experiment. Because I was alone with the participants during the experiment, the verbal encouragement could have made shy people feel uneasy, causing the subjects to react differently from how they would if they had felt more comfortable. Data show that shyness is consistently correlated with multiple aspects of dysfunctional social behavior (Bruch, Gorsky, Collins, & Berger, 1989). Carrying out a task for a complete stranger could cause anxiety for someone who is introverted, or shy. This would add stress onto the shy participants, causing them to react negatively to the verbal encouragement, and make more

mistakes. “Shyness has been defined as an emotional-behavioral syndrome characterized by social anxiety and interpersonal inhibitions or avoidance” (Eisenberg, Fabes, & Murphy, 1995, p. 505). Reported shyness has been associated with negative emotional intensity, physiological reactivity, and personal distress. Shyness is also highly negatively related to dispositional positive affect (Eisenberg et al., 1995). Considering previous research showing that positive affect is related to higher success in a variety of aspects of life, shyness could therefore inhibit success.

I also did not take into account whether the participants were, or ever had been involved in sports. Athletes tend to have better hand coordination than non-athletes. Also, athletes or former athletes would most likely have received verbal encouragement many times before the experiment, causing them to respond more readily and positively to the encouragement. On the other hand, a non-athlete may have never or seldom received verbal encouragement during a given task prior to the experiment, causing them to react differently to the encouragement. In addition, even though I impaired every participant’s hand the same way, the glove fit differently on everyone making it easier or harder for some subjects. Although I used several different rubber bands throughout the sessions, each one still lost resistance over time due to it being stretched by multiple subjects. This would have made it harder for subjects with the newer rubber band opposed to those subjects who had it after several uses.

Future Research

Research following the current study is anticipated to be very extensive. Because the current study failed to find significant results, it would be beneficial to repeat the experiment multiple times after correcting the problems stated previously. First, I would need a bigger sample size. I would find a different scale to measure positive affect only, since the scale used in

the current study measured both positive affect and negative affect. The problem with this issue is that positive affect is independent of negative affect. For example, having very low positive affect does not imply that one has high negative affect; therefore, negative affect is irrelevant in the current study. In order to correct the problems for the way I bound each participant's hand, I would need to buy or make an apparatus that was compatible for all sizes and shapes of hands. Although I could not control for individual differences, I could begin the experiment developing rapport with all participants to decrease anxiety of the shy participants.

After controlling some variables and repeating the current experiment, I would hope to that positive affect and verbal encouragement have significant positive effects on success. Following this series of experiments, I would carry out the longitudinal study the current study was intended to simulate. After attending or while attending graduate school for occupational therapy, I will have acquired the necessary knowledge and resources to study the effects of positive affect and verbal encouragement on success in patients receiving occupational therapy. I will be carrying out longitudinal case studies on my patients in order to examine effects. Because it would be unethical for me to give some of my patients verbal encouragement and not give it to the others, I will use a multiple baseline treatment design.

The multiple baseline design addresses the impact of the treatment of the independent variable on the dependent variable, the same behavior, for different participants. Once a baseline has been established, the independent variable is applied to one of the participants. At this time, baseline is being established for the other participants. Once improvement is see for the first participant, the treatment is applied to the second subject, and so on (Barger-Anderson, Domaracki, Kearney-Vakulick, & Kubina, 2004). Barger-Anderson et al. explain that the reasoning behind the multiple baseline design is that if one subject shows improvement when

treatment is started, it is probable that improvement is due to the treatment. This design is popular because it does not require withdrawal of the independent variable (Carr, 2005).

Using the multiple baseline design, I will maintain baseline with one of my patients, which will most likely be established as the very beginning of their rehabilitation with me. Then, I will give verbal encouragement as a supplemental treatment to their regular everyday exercises. The dependent variable will be the patient's success, defined in my own terms as achieving higher levels of functioning for activities of daily living (ADL). If my first patient shows an increase in success at a faster rate than my other patients, I will give verbal encouragement to my next patient, and so on. The multiple baseline design partially fixes the ethical issue at hand.

Regarding positive affect, I would simply measure my patients' affect at baseline and then periodically measure it throughout their rehabilitation. I would be looking to find that the patients' positive affects increase over time given that the treatment, or verbal encouragement in this case, increases their positive affects. I am hoping with my future research, my results will prove that verbal encouragement increases patient success. If it does, I can push for verbal encouragement to be an accepted universal component of success in patients receiving occupational therapy, and eventually have it incorporated in every method implemented by therapists around the world; thus, revolutionizing the field of occupational therapy.

Although, my results from the current study did not reveal significant results, they are heading in the right direction. With corrections, fewer time restraints, and more resources, the study can prove to give me a general idea of the effects of both positive affect and verbal encouragement on a general level. It lays an excellent foundation for the extensive research I anticipate to do throughout my future career as an occupational therapist.

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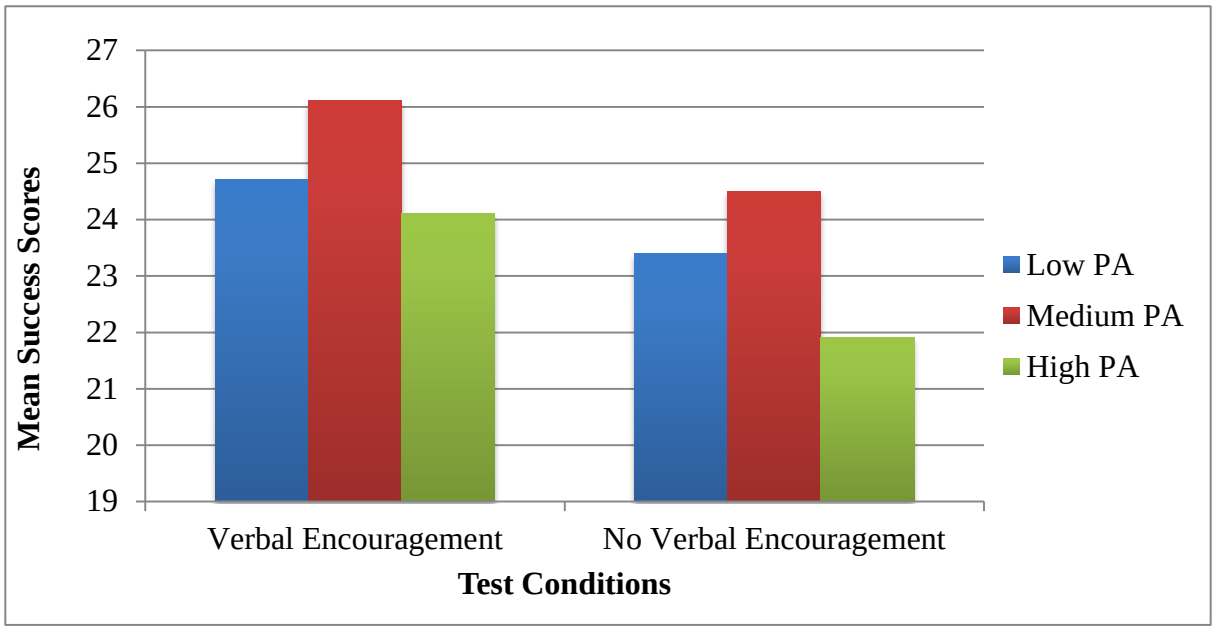

Figure 1. Participants' mean success score dependent on their positive affect scores and whether or not they received verbal encouragement. No significant differences were found between success scores.

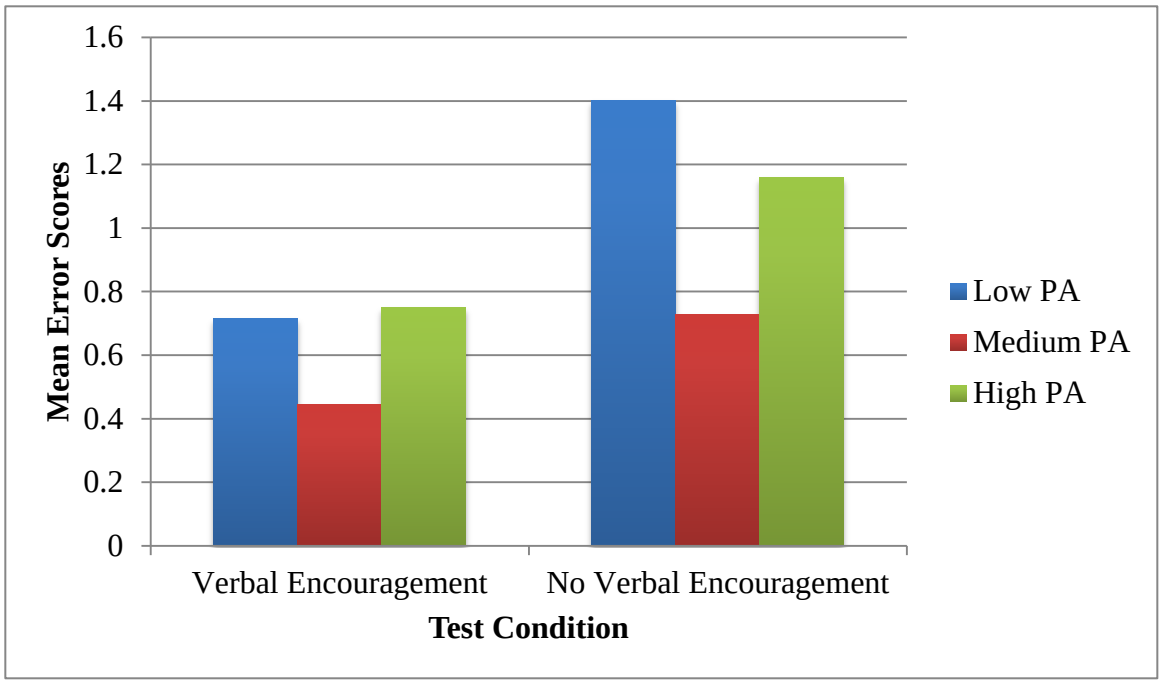

Figure 2. Every participant's mean error scores dependent on their positive affect scores and whether or not they received verbal encouragement. No significant differences were found between success scores.

Appendix A

Informed Consent

My name is Kylie Fischer and I am a student at Missouri Southern State University. I am doing an experiment examining the effects of positive affect and verbal encouragement on success. As a participant, you will be administered a survey including 20 items used to identify your general mood over the past week. Following the completion of the survey, I will bind your dominant hand to simulate common hand impairments found in patients receiving occupational therapy. I will use ordinary household items such as scotch tape, rubber bands, and gloves. You will then be asked to use your impaired hand to pick up paper clips that have been spilled on a table, one by one. You will have 1 minute to put as many paper clips into an empty water bottle as you can while trying not to drop any. The binding of the hand is used only to simulate motor functioning impairment. It is not used to inflict pain. **CAUTION:** Although the binding of the hand is not anticipated to be painful, it could cause mild discomfort. Participation in this study is completely voluntary. If you decide not to participate, there will not be any negative consequences. The experiment should take approximately 10 to 15 minutes. Participants remain anonymous and results are kept confidential. You should not anticipate any adverse effects, but if you do, call my advisor Dr. Susan Tucker at 1(417) 625-9776.

By signing this form I am attesting that I have read and understand the information above and I freely give my consent to participate.

_____ _____

Signature Date

_____

Printed Name

Appendix B

Age _____

The Positive and Negative Affect Schedule (PANAS)

PANAS Questionnaire

This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. **Indicate to what extent you have felt this way over the past week.**

1	2	3	4	5
Very Slightly or Not at All	A Little	Moderately	Quite a Bit	Extremely

_____ 1. Interested	_____ 11. Irritable
_____ 2. Distressed	_____ 12. Alert
_____ 3. Excited	_____ 13. Ashamed
_____ 4. Upset	_____ 14. Inspired
_____ 5. Strong	_____ 15. Nervous
_____ 6. Guilty	_____ 16. Determined
_____ 7. Scared	_____ 17. Attentive
_____ 8. Hostile	_____ 18. Jittery
_____ 9. Enthusiastic	_____ 19. Active
_____ 10. Proud	_____ 20. Afraid

Watson, D., Clark, L. A., & Tellegan, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. Journal of Personality and Social Psychology, 54(6), 1063-107