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GRATITUDE INTERVENTIONS WITH PHYSICAL THERAPY PATIENTS

by

Adam Fishel Frose

A Dissertation

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

Major: Counseling Psychology

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Dedication

This dissertation is dedicated to my wife, Erica L. Frose who has supported my dream and provided me with love throughout this journey. Since we first met, she has inspired me to be a better human being and helped cultivate a sense of intrigue and curiosity to appreciate the little things in life, which has led to much larger rewards.

I also dedicate this to my mother, Rhonda D. Fishel, who has been my biggest supporter, fan, and cheerleader throughout my educational journey. Your love and support means a tremendous deal.

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I would also like to thank Dr. Richard Lightsey, Dr. Douglas Strohmer, and Dr. Michael Mackay. It takes a village to help mold a doctoral student into a doctoral candidate and you all have made tremendous impacts on myself personally and professionally. Your collective guidance, patience, and support throughout has been truly wonderful.

Abstract

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Physical injuries and ailments affect many people each year, causing pain, loss of mobility, and decreased functionality in their daily lives. Given that psychological factors affect physical recovery, interventions that can be added to physical therapy to bolster psychological resilience could substantially enhance positive health outcomes for patients. Gratitude interventions have been shown to increase a variety of positive health outcomes. The study explored whether providing gratitude interventions to physical therapy patients would increase positive physical functioning addressed in physical therapy as well as overall life satisfaction and gratitude in comparison to a control group of patients receiving physical therapy as usual. Three one-way ANOVAs revealed no significant differences between the two groups on physical functioning, satisfaction with life, or gratitude scores. However, the study was limited by a small sample size, which makes it difficult to draw conclusions about the efficacy of the intervention. Limitations of the study, implications, and future research directions are provided.

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Gratitude Interventions with Physical Therapy Patients

According to the Substance Abuse and Mental Health Services Administration (SAMHSA, 2014), behavioral health refers to the connection between an individual's mental and/or emotional well-being and the behaviors that affect wellness. Behavioral health practices are increasing in health care settings because of the documented benefits of integrating psychological care with medical treatment (D'raven, Moliver & Thompson, 2015). However, most behavioral health treatments focus on reducing symptoms rather than generating positive states of being (Harris & Thoresen, 2006). In contrast to a focus on symptoms, positive psychology addresses individuals' strengths and how to build on them. Empirical studies based on the efficacy of positive psychology interventions, such as increasing positive states of being like gratitude, are needed in primary care and other medical settings. Although multiple medical settings may benefit from such studies, a physical therapy office was chosen due to the mental health component of recovery as well as the potential benefit of short term add on services for patients in this setting.

Physical therapists typically focus on increasing their patient's functional status rather than addressing their mental health needs (Jette, 1993). However, physical recovery has psychological as well as physical components (World Confederation for Physical Therapy, 2014). Given that psychological factors affect physical recovery (Taylor, Wilson, & Sharp, 2011), interventions that can be added to physical therapy to bolster psychological resilience could also substantially enhance positive health outcomes for patients. One subset of positive psychology interventions, gratitude interventions, has been shown to be beneficial in enhancing desired physical (e.g., increased sleep, and exercise, reduced diastolic blood pressure and headaches) and behavioral health outcomes (e.g., increased positive affect and happiness, and decreased worry and

depression) among study participants (Emmons & Mishra, 2012). This current study examined whether gratitude interventions increased the positive physical functioning and overall life satisfaction among physical therapy patients.

Physical Therapy

Physical injuries and ailments affect many people each year, causing pain, loss of mobility, and decreased functionality in their daily lives (American Physical Therapy Association, 2011a). The US Bureau of Labor Statistics estimated that three million individuals are seriously injured on the job each year, leading to 55 billion dollars in costs in 2012 alone (American Physical Therapy Association, 2016b). This figure is solely based on injuries at the workplace, which constitute only a small percentage of the total of injuries and ailments for which individuals need physical therapy services. According to Walsh et al. (2008), approximately one in four individuals in the United States is affected by a musculoskeletal condition. However, physical therapy is not only for individuals struggling with musculoskeletal conditions, but also is prescribed for neuromuscular, cardiovascular, pulmonary, and/or integumentary systems conditions (American Physical Therapy Association, 2016a). Thus, a large number of people might receive services from physical therapists.

Physical therapy has been shown to help individuals with a variety of physical injuries and ailments (American Physical Therapy Association, 2016b), and physical therapists are the primary healthcare providers engaged in the recovery process. They promote health and fitness and help restore and maintain functionality towards optimal performance and participation in life (American Physical Therapy Association, 2011b). Through their treatment, physical therapists frequently are able to reduce the need for surgeries and decrease the need for long-term medication use (American Physical Therapy Association, 2016a). Although physical therapists

are effective in treating a variety of physical health conditions such as basic mobility movements (e.g., getting up from a resting position, and being able to reach overhead while standing), they do not have the training to address patients' mental health needs, which can also play a significant role in physical recovery. In a study asking 152 physical therapists about their interest and use of cognitive behavioral therapy (CBT) techniques, many indicated that they were interested in utilizing psychological interventions, and some even reported using techniques such as activity pacing and pleasurable activity scheduling. However, many psychological interventions such as cognitive restructuring, relaxation training, and visual imagery were not utilized due to a self-reported lack of knowledge, reimbursement concerns, and time constraints (Beissner et al., 2009). Although CBT or other standard psychological interventions may be outside the competency and practical limitations for physical therapists, brief positive psychology interventions might be appropriate for the physical therapy setting.

Positive Psychology and Gratitude

Positive psychology is based on the study of positive emotions, thoughts, and character strengths, and seeks to answer the question of how individuals can experience the good life (Seligman & Csikszentmihalyi, 2000). In contrast to the larger field of psychology, positive psychology shifts the focus from repairing the worst things towards building the best qualities in individuals' lives (Emmons & Shelton, 2002). Positive psychology seeks to develop interventions that bring about positive outcomes for patients (Seligman, Steen, Park, & Peterson, 2005). This includes positive physical health outcomes.

Fredrickson's (2004) Broaden and Build theory of positive emotions provides a rationale for how attending to and increasing positive emotions enhances health. It is based on how positive emotions broaden individual's "thought-action repertoires and build their enduring

personal resources” (p.147). Fredrickson argued that when we experience positive emotions, the quantity and quality of our actions and thoughts expand. The Broaden and Build theory suggests that each positive emotion has a unique evolutionary purpose and discrete function. Positive emotions are useful in encouraging cognitive and behavioral activities that build resources that can be used later (Wood, Froh, & Geraghty, 2010).

Positive emotions such as joy, happiness, interest, contentment, or gratitude widen individuals’ perspective on attention; alter behaviors towards psychological and physically positive directions; and have indirect and long-term adaptive value through building enduring personal resources such as social connections, coping strategies, and environmental knowledge (Fredrickson & Losada, 2005). Positive emotions and a broad thought-action repertoire amplify each other, leading to an upward spiral of well-being. Positive emotions broaden people’s ability to consider a wider range of behavioral options, and increase resiliency while undoing the effects of negative emotions (Emmons & Stern, 2013). In physical therapy settings, this may translate into increased resilience in dealing with the pain of physical injury and enhancing effective behavioral coping. Fredrickson (2004) also wrote of the *undoing* effect that positive emotions have on negative emotions by shortening the deleterious effects of certain negative emotions. Although researchers have begun to study a number of different positive emotions, the current study will focus on gratitude.

Defining gratitude has been difficult, as there is no clear consensus about the definition (Toussaint & Friedman, 2009). Gratitude has been regarded as both a trait and/or a state (Peterson & Seligman, 2004). It has been suggested that gratitude occurs when a person perceives that another person or source (luck, fate, God, etc.) has intentionally acted to better the beneficiary’s well-being (Bono & McCullough, 2006; Emmons & Mishra, 2012; Fredrickson,

2004; McCullough et al., 2002). Although a general acknowledgement of others' helpful efforts can cause a sense of gratitude, Friedman (1989, 2000) defined gratitude as being thankful for general abundance in life; experiences, inner resources, and qualities; as well as future prosperity and positive experiences. Watkins, Woodward, Stone, and Koltz (2003) posited that there were four principle areas that identified grateful people, including possession of abundance in their lives, appreciating external contributions of others to their well-being, acknowledging the inherent value of the practice of gratitude and expressing gratitude, and appreciating little pleasures that most individuals already possess in life. In general, it seems that Emmons and Mishra summarized the characteristic by proclaiming, "gratitude is a mindful awareness of the benefits in one's life" (2012, p. 254).

Gratitude Interventions

Gratitude interventions are some of the most widely studied and supported positive psychology interventions (Wood et al., 2010). Gratitude has caught the attention of many researchers because of the reported beneficial mental and physical health outcomes associated with gratitude interventions (Davis et al., 2016). Such outcomes include increases in happiness and decreases in depression (Seligman et al., 2005); decreases in worry (Wood et al., 2010); and increases in positive affect, overall life satisfaction, and expected life satisfaction in the upcoming week, as well as decreases in negative affect (Emmons & McCullough, 2003).

More pertinent to the purpose of this study, gratitude has been found to increase sleep quality and decrease diastolic blood pressure (Jackowska, Brown, Ronaldson, & Steptoe, 2015); reduce bodily complaints, increase sleep duration and efficiency, and promote exercise (Emmons & McCullough, 2003; Wood et al., 2008); and decrease headaches and increase hours spent exercising (Emmons & McCullough, 2003). Although many studies have pointed to the potential

physical benefits of combining gratitude interventions with interventions traditionally delivered in health care settings, few have actually studied how gratitude affects positive health outcomes for medical patients concurrently undergoing treatment.

Specific to this study, gratitude may widen a participant's perspective on attention to the importance of physical therapy, thus increasing motivation and similarly leading to more positive physical behaviors such as continuing to come to physical therapy and the practice of therapeutic exercises at home. Gratitude may also increase the participant's personal resources such as increasing social connectedness (e.g., with the physical therapist, friends, and family) that may improve feelings of support and encouragement towards the participant's goals. This increased sense of support may be drawn upon in times of need, such as when experiencing physical pain or disability. The Broaden and Build theory also indicates that gratitude may also increase participants' coping strategies through increased awareness of opportunities and increased attentiveness of different approaches to reach their goals.

Satisfaction with Life

Behavioral health practices emphasize the importance of both physical and mental/emotional treatment. Integrated care teams work towards integrating physical health and behavioral health practices aimed at improving levels of well-being (Laderman & Mate, 2016). From a positive psychology lens, interventions with physical therapy patients should not only focus on increasing physical aspects of health, but also on increasing other areas of mental/emotional health, such as satisfaction with life, which might also affect physical functioning.

Satisfaction with life is based on individuals' cognitive-judgmental view of the satisfaction in their lives (Diener, Emmons, Larsen, & Griffin, 1985). These individual perspectives are

relevant to physical therapy patients as they may influence their motivation to complete exercises and continue to attend physical therapy. Thus, it is important to examine if positive psychology interventions that are given to physical therapy patients will influence their general level of life satisfaction.

Though no studies have been conducted specifically examining satisfaction with life among physical therapy patients completing gratitude interventions, there is literature on gratitude interventions and satisfaction with life. Emmons and McCullough (2003) reported that those who wrote about five things to be grateful for had increases in overall life satisfaction and expected life satisfaction in the upcoming week. In a separate study with adults with neuromuscular disease, Emmons and McCullough (2003) found that participants who practiced gratitude for 3 weeks maintained increases in overall life satisfaction as well as expected life satisfaction in the upcoming week. Both studies were conducted with individuals who were not receiving other healthcare treatment as patients.

Summary and Hypotheses

The current study attempted to assess whether the addition of gratitude interventions to physical therapy as usual enhances psychological and physical health outcomes among physical therapy patients. Similar to D'raven et al.'s (2015) research in primary care, this study was based on the need to identify low-cost, easily delivered, and effective interventions that produce immediate and sustainable positive physical and mental health results. The ease of explanation and implementation along with the cost-effective and non-stigmatizing nature of gratitude interventions may provide healthcare employees a new tool to use with patients. Although administering and practicing gratitude exercises require some training, physical therapists and other healthcare professionals may easily be trained by mental health providers to utilize

gratitude interventions in conjunction with established physical therapy practices. Providing such training is consistent with the healthcare field's trend towards providing integrated care services; therefore, identifying interventions that foster or augment positive results for patients is important for development both of practice and theory.

Hypothesis 1: Physical therapy patients who receive gratitude interventions will have increased gratitude when compared to patients who receive standard physical therapy. This hypothesis examines the effects of gratitude interventions on a common measure of gratitude and partially serves as a manipulation check.

Hypothesis 2: Physical therapy patients who receive gratitude interventions will have increased physical functioning when compared to patients who receive standard physical therapy (treatment as usual).

Hypothesis 3: Physical therapy patients who receive gratitude interventions will have increased satisfaction with life when compared to patients who receive standard physical therapy.

Method

Participants

Participants were 40 patients ranging in age from 24 to 63 years old ($M = 52.30$, $SD = 10.02$) who were recruited from a population of physical therapy patients seen at a non-profit healthcare agency that provides services to low income individuals residing in a mid-sized city. Twenty-four participants identified as Black/African American (60%), 12 were White/Caucasian (30%), one was Asian American (2.5%), one was Hispanic (2.5%), one identified as Other (2.5%), and one participant identified as American Indian or Alaska Native as well as White (2.5%). Thirty-one participants were women (77.5%). Education among participants ranged from

no formal education to doctoral degree. The highest proportion of individuals in one category was 13 participants (32.5%) who completed a high school education. Most of the participants ($n = 34$, 85%) were in the high school to bachelor's degree range. Participants' income levels ranged from less than \$10,000 to \$60,000-\$69,999. The highest proportion of individuals in one category was 13 participants (32.5%) who made less than \$10,000. Most of the participants, ($n = 36$, 90%) fell in the range of \$0-\$39,999 a year.

The total number of participants who completed the study in both the experimental and control group was small. Five participants in the experimental group completed the pretest and posttest measures for the GQ-6 and SWLS (four completed the posttest AMPAC measure). All the finishers in the experimental group were female, three were Black/African American, and two were White/Caucasian. For the experimental group completers, the average age was 50.4 and three participants finished high school (60%), one participant finished some college credit, but less than 1 year (20%), and another individual completed an associate's degree (20%). Participants' income levels ranged from less than \$10,000 to \$40,000-\$49,999. Six participants in the control group completed all pretest and posttest measures. Of these finishers (all were also female), four were Black/African American and two were White/Caucasian. The average age was 48.66 and education level ranged from high school graduate (33%), 1 or more years of college, no degree (33%) to master's degree (33%). Finally, participants' income levels ranged from less than 10k to \$30,000-\$39,999.

Instruments

Physical activity. The Activity Measure for Post-Acute Care (AM-PAC) (Jette, Haley, Coster, & Ni, 2013) was used to measure the primary dependent variable of physical functioning. The AM-PAC™ measures 3 functional domains including individual's basic mobility, daily

activity, and applied cognitive areas (Jette et al., 2014). For the purposes of this study, only the Basic Mobility Outpatient or Daily Activity Short Forms were utilized (depending on physical therapist choice). The basic mobility short form consists of 18 items and assesses the difficulty individuals experience while performing various tasks. An example item being “How much difficulty do you currently have cleaning up spills on the floor with a mop?” The daily activity short form consists of 15 items that assess difficulty with common daily activities. An example item being “How much difficulty do you currently have tying your shoes?” Scores on the basic mobility scale can range from 18 to 72 and scores on the daily activity scale range from 15 to 60, with higher scores indicating increased range of mobility and activities. Raw scores are converted to scale scores. Both scales are based on questions with scores ranging from 1 to 4 (1 unable to complete task, 2 a lot of difficulty, 3 a little difficulty and 4 no difficulty). The short forms of the tests have demonstrated high test-retest reliability (at 1-month, 6-months and 12 months), construct validity, and internal consistency (Cronbach’s alpha ranged from 0.90 to 0.95; Jette et al., 2013). Scaled scores were obtained from patient charts; therefore internal consistency could not be calculated for the current sample. However, reported internal consistencies were derived from a sample of over 80,000 physical therapy patients at various Cleveland Clinic Health System clinics that are likely similar to the study sample.

Gratitude. The Gratitude Questionnaire Six-Item Form (GQ-6, McCullough, Emmons, & Tsang, 2002) was used to measure gratitude. The GQ-6 is primarily concerned with gratitude as an affective trait characterized by a grateful disposition or disposition toward gratitude. The six items of the GQ-6 are designed to assess individual differences in the propensity to experience gratitude in daily life as well as the strength of an individual’s disposition to view events with

grateful emotions (McCullough et al., 2002). Respondents endorsed each item on a 7-point Likert-type scale ranging from “strongly disagree” to “strongly agree.”

Cronbach’s alpha estimates for the scale score have ranged from .76 to .84. In the current sample, the Cronbach’s alphas for the GQ-6 scores were .79 at pretest and .82 at posttest. Scores on the GQ-6 correlate substantially with other measures hypothesized to assess the extent to which people experience gratitude in daily life (Gray, Emmons, & Morrison, 2001; McCullough et al., 2002). Some studies have reported the risk of a social desirability bias, but otherwise GQ-6 scores have demonstrated strong reliability (McCullough et al., 2002). The GQ-6 is a desirable instrument for this study based on the short length coupled with strong psychometric properties.

Satisfaction with life. The Satisfaction with Life Scale (SWLS, Diener et al., 1985) was used to measure global level of life satisfaction. The SWLS focuses on respondents’ judgments of what is important to them rather than criteria that are generally considered to be important (e.g., by the population at large or by experts). The SWLS contains 5 items, with each item measured on a Likert scale ranging from 1 to 7. An example question being “In most ways my life is close to ideal.” Item scores are summed for an overall instrument score ranging between 5 (low satisfaction) and 35 (high satisfaction). The SWLS is suitable for individuals of different age groups.

SWLS scores exhibit desirable psychometric properties, including high internal consistency, high temporal reliability, good discriminant validity, and the scale correlates moderately to highly with other measures of subjective well-being (Diener et al., 1985). Cronbach’s alphas for SWLS scores range in the .80’s and .90’s (Diener, Inglehart, & Tay, 2013). In the current sample, the Cronbach’s alphas for SWLS scores were .81 at pretest and .83

at posttest. SWLS scores show discriminant validity from other related constructs, such as optimism (Lucas, Diener, & Suh, 1996). Since the SWLS's development in 1985, the instrument has been used successfully in many different countries, indicating that people understand and can easily answer the subjective well-being questions (Diener et al., 2013).

Number of interventions completed. A combination of therapist and self-report observations were used to assess number of times the gratitude exercises were completed by the participant each week. Participants were asked to keep track of the number of times they practiced the gratitude interventions during the week. They reported that information to the therapist during the next gratitude intervention session.

Descriptive information. Participants responded to items asking about age, race, educational level (no schooling completed to doctoral degree), and income (less than \$10,000 to \$150,000 or more).

Procedure

Physical therapy patients of a mid-south non-profit healthcare agency that provides various healthcare services to low income individuals were recruited to participate in the study. Physical therapists were provided a script that they used to describe the study to potential participants. At the end of the first physical therapy session, physical therapists informed their patients about the study and asked them if they would like to participate. Those who agreed were assigned by the physical therapist to either the treatment (gratitude intervention) or control (physical therapy as usual) group.

Physical therapy patients routinely complete a battery of assessments, including the AM-PAC™, prior to their first physical therapy session and then again on a monthly basis. Following participants' agreement to participate, they were provided with information relevant to their

specific participation (intervention or control group) and then completed the Satisfaction with Life Scale and Gratitude Questionnaire. Those placed in the intervention received gratitude interventions after their physical therapy sessions, beginning with the first session. Interventions were provided by four doctoral students in counseling psychology. All interventionists were trained by the primary investigator, and used a uniform script of procedures, interventions, and guidelines for how to administer them to participants. Interventionists met for an initial 90-minute training meeting to learn about the gratitude interventions and practice the suggested wording for the interventions through role-play. Training was designed to increase consistency among the interventionists. Students providing the interventions asked questions and processed intervention sessions with the primary investigator throughout the study.

At the second through fourth sessions, the therapist providing the intervention recorded the number of times (if any) that the participant practiced the gratitude intervention during the previous week. Participants in the intervention group completed the posttest measures at the beginning of their fourth gratitude intervention session. Participants placed in the control group were asked to complete the pretest and posttest questionnaires and receive physical therapy as usual, but did not receive the gratitude intervention. No incentives for participation were provided.

Interventions took place approximately once a week with patients for 4 weeks and there was some variability due to the timing of appointments in the community setting. Different gratitude exercises were taught during the first 3 weeks, and in the fourth week the participant chose to repeat their “favorite” exercise from the previous three weeks. The order of the interventions was: the gratitude journal, the gratitude visit, performing a grateful reappraisal, and the intervention of the participant’s choice. The gratitude journal intervention was based on

having participants write out three things that they are grateful for (over the past 24 hours) and why they were grateful for those things. The gratitude visit intervention was based on having the participant think of a person who has deeply impacted their life in a positive way, but has never properly been thanked, and to write them a letter thanking them. After the letter was written, the participant was instructed to visit (or call) the individual and read it to them. Finally, performing grateful reappraisal was based on having participants write out general memories over the past few days and then helping the individual to identify neutral or negative events from the memories selected. The task was then to have the participant identify positive outcomes from previously perceived negative events.

The order of interventions was determined based on perceived intensity level and potential rapport needed between therapist and patient based on each intervention. The gratitude journal (first) intervention is one of the most strongly supported measures in the gratitude literature and is very easy to administer, whereas the gratitude visit (second intervention) has been identified as potentially posing the largest mental health gains (Seligman et al., 2005). The grateful reappraisal (third) gratitude intervention was identified as an intervention that may be better suited to be administered after rapport had been at least minimally established.

The evidence is inconclusive regarding the appropriate frequency that gratitude interventions should be practiced in order to maximize potential positive outcomes. Lyubomirsky, Sheldon, and Schkade (2005) indicated that individuals who participated in the daily three good things intervention for 6 weeks did not have significant positive changes, but that participants who practiced the three good things intervention only once a week had increases in well-being. Considering the concern in the literature about daily practice of gratitude exercises, the researchers decided to instruct participants to complete the intervention once in

session and two other times over the course of the next week for a total of three times per week. For the gratitude visit intervention (second intervention), participants were asked to draft what they wanted to say in the session and to read the information to the intended recipient over the course of the next week, therefore completing the intervention one time.

Timing of a weekly intervention for 4 total weeks was based both on evidence that such clustering of interventions is more effective than completing interventions over a longer period of time (Emmons & McCullough, 2003) and on the expected typical duration of physical therapy at the site.

Results

Overall, 40 participants began the study, with the experimental and control group each starting with 20 participants. Of the 20 participants in each group, six completed the full protocol in the control group and five finished in the experimental group (four for the AMPAC score). Given the small sample size, the Shapiro-Wilk normality test was conducted to assess for normality. The data for the pretest AM-PAC ($W = 0.91, p = .328$) and posttest AM-PAC ($W = 0.89, p = .214$) as well as the pretest SWLS ($W = 0.93, p = .418$) and posttest SLWS ($W = 0.94, p = .529$) met the assumptions of normality, whereas the GQ-6 pretest ($W = 0.71, p = .001$) and posttest ($W = 0.82, p = .017$) data did not. However, although the GQ-6 pretest and posttest scores showed more skewness than the other measures ($-.72$ and $-.85$, respectively), the skewness and kurtosis ranges were within acceptable limits (less than the absolute value of 1 for skewness and less than the absolute value of 2 for kurtosis) for all variables (George & Mallery, 2010) and no test statistics (calculated by dividing the sample skewness and kurtosis by their standard errors) were larger than $|1.96|$. The number of average interventions (including the practice sessions done outside of session) completed was four out of a possible eight (range = 3 to 5, SD

= .81). For participants in the experimental group, the average amount of time to complete was 24.75 days and in the control group the average amount of days was 41.83.

Since assignment to group had been quasi-random, preliminary analyses examined whether there were differences between the control and experimental group on the pretest measures of the variables ($n = 40$). There were no significant differences between groups on the measures of physical mobility, $F(1, 37) = .63, p > .05$, satisfaction with life, $F(1, 38) = .02, p > .05$, or gratitude, $F(1, 38) = 1.02, p > .05$. However, a post-hoc analysis of only those who completed the full protocol indicated a significant difference in pretest scores on the satisfaction with life measure, $t(8.08) = -2.31, p < .05$. A series of oneway ANOVAs also tested for any differences on age and study pretest measures between those who completed the study and those who dropped out. There were no significant differences by completion status on age, $F(1, 35) = .00, p > .05$, or the measures of physical mobility, $F(1, 37) = .84, p > .05$, life satisfaction, $F(1, 38) = 2.17, p > .05$, or gratitude, $F(1,38), = 1.90, p > .05$.

Hypothesis Testing

Three one-way analysis of variance (ANOVA) procedures using gain scores were used to test the hypotheses. Gain scores calculated by determining the change from pretest to posttest results allow for the amount of change in the two groups to be compared. Using gain scores has been found to be a viable analysis option when assessing the mean change in pre and post outcomes in different groups (Grace-Martin; Knapp, & Shafer, 2009). It was expected that the experimental group would show greater improvement on the measures than the control group.

There was not a statistically significant difference between GQ-6 group means as determined by the one-way ANOVA, $F(1,9) = .80, p = .393$, eta squared = .04. For the experimental group, GQ-6 scores averaged 35.40 ($SD = 8.26$) at pretest and 35.60 ($SD = 4.15$) at

posttest with five respondents. For the control group, GQ-6 scores were 38.50 ($SD = 6.65$) at pretest and 40.83 ($SD = 2.40$) at posttest with six respondents. GQ-6 pretest scores ranged from 22-42 in the experimental group and 25-42 in the control group. Based on one sample of 1,224 adults who took the GQ-6 (McCullough, Emmons, & Tsang, 2002), the experimental pretest and posttest groups fell under below the 25th percentile range (lowest quartile with scores of 35 or below) whereas the control pretest and posttest groups were within the 50th percentile (middle quartile with scores between 38 and 42). Table 1 shows the means, standard deviations, and ANOVA results by group at pre and posttest.

There was no statistically significant difference between AM-PAC group means as determined by the one-way ANOVA, $F(1,8) = 1.59$, $p = .243$, eta squared = .17. For the experimental group, AM-PAC scores averaged 42.75 ($SD = 11.26$) at pretest and 49.5 ($SD = 12.01$) at posttest with 4 respondents. For the control group, AM-PAC scores were 44.00 ($SD = 15.79$) at pretest and 45.83 ($SD = 18.47$) at posttest with six respondents. AM-PAC pretest scores ranged from 33-59 in the experimental group and 25-62 in the control group indicating considerable variability of physical functioning among participants in both groups. The eta squared of .17 showed a difference between the groups' scores over time, but the sample may have been too small to detect the effect at the level of statistical significance.

There was not a statistically significant difference between SWLS group means as determined by one-way ANOVA, $F(1,9) = .55$, $p = .476$, eta squared = .06. For the experimental group, SWLS scores averaged 18.60 ($SD = 3.50$) at pretest and 18.80 ($SD = 2.77$) at posttest with five respondents. For the control group, SWLS scores were 25.50 ($SD = 6.22$) at pretest and 24.00 ($SD = 7.18$) at posttest with six respondents. SWLS pretest scores ranged from 16-22 in the experimental group and 14-33 in the control group. Based on SWLS scoring benchmarks, the

posttest mean for the experimental group was in the same “slightly below average” range (e.g. 15-19) and the posttest control group mean fell in the “average score” (e.g., 20-24) range.

Discussion

This study attempted to examine if a medical population that received a brief gratitude intervention in addition to the usual physical therapy services had increased physical improvement and higher scores on measures of satisfaction with life and gratitude when compared to patients who only received physical therapy (treatment as usual). Due to a smaller than anticipated census at the medical facility as well as participants returning for fewer than expected physical therapy sessions (and therefore not completing the intervention protocol), the study is limited by a small sample size in both the intervention and control groups. Although the physical mobility scores were higher in the intervention group, no significant differences were found between groups on the AM-PAC measure or either of the other measures. It is possible that the intervention period was not long enough for changes in health over and above those expected from the usual physical therapy treatment to occur or that gratitude interventions do not contribute to increased mobility beyond what is expected with physical therapy treatment and natural healing. However, the change in groups over time accounted for 17% of the effect and is indicative of an effect, but the low power for the analyses does not allow for definitive conclusions.

Even though it is possible that improvements in physical mobility might not have had time to occur, it was expected that changes would occur in life satisfaction and gratitude measures given that previous studies have shown changes occurring over 2 to 3 week time periods (Emmons & McCullough, 2003). It is unclear why there was no improvement in the current study and the estimated effect sizes were smaller for these analyses than for the AMPAC,

suggesting that the lack of statistical significance was not due to lack of power as even larger samples sizes might not have resulted in significant effects.

Differences in the setting (physical therapy office) or patient population (physical therapy patients) might account for not finding the same improvement on the measures of gratitude or satisfaction as reported in other studies. Although undergraduate students enrolled in a health psychology class that practiced gratitude interventions reported reductions in bodily complaints (Emmons & McCullough, 2003), gratitude interventions may not have a similar effect with physical therapy patients seeking treatment for current chronic pain and/or physical mobility issues. Being able to identify the things that individuals can be grateful for may be harder for individuals who are struggling with pain and mobility troubles in and out of session. This may be especially true for members of a low socioeconomic status population that faces additional daily life stressors (Baum, Garofalo, & Yali, 1999).

Participants completed an average number of four gratitude exercises (in and out of session) and the highest number of practiced gratitude exercises was five out of the possible eight times. Since there was not a significant difference between gratitude scores of the experimental and control groups, it is possible that the gratitude intervention was not effective in enhancing gratitude or that the sample was not large enough to detect the effect. It is also possible that the connection between the benefit of practicing gratitude in addition to physical therapy services may not have been made, or simply that participants in a physical therapy setting may not be as open to practicing psychological interventions, specifically those about gratitude.

In addition to the nonsignificant results that might be due to the lack of power, another potential explanation is that the time between pretest and posttest differed for the intervention and control group with the control group having a longer period between completing the pre and

posttest measures. This timing difference is a function of the study procedures. Experimental group participant data were gathered immediately following the final session by the interventionist, but the control group participants may not have received the posttest measures until their return following their fourth physical therapy session (i.e., when they checked in for their next session), which could have been two or even three weeks later. It is possible that this longer time-period allowed the control group's scores on the measure of physical mobility to be higher as a function of time since the injury and referral to physical therapy. If this is the case, then the finding that the scores on the mobility assessment were still higher in the intervention group might be suggestive that the gratitude intervention was impactful. Additionally, the body's natural recovery process over the longer time period might have led to the larger increases in scores on the gratitude measure for the control group. However, it is unclear how the difference in time since injury/referral might account for the non-significant differences in life satisfaction since control groups participants' scores on the measure of satisfaction with life actually decreased slightly.

Limitations

An obvious limitation is the sample size. This was partially the result of a smaller than expected census at the agency and the agency's move to another physical location in the middle of the study, which caused further decreases in the number of patients being seen during that transition time. Additional limitations to the study include potential issues with patient selection and length of the intervention. Participants volunteered for the study and it is not possible to determine whether those who volunteered were less distressed and felt they could take the time to participate or more distressed and wanting extra services. When patients volunteered for the study, they were assigned to either the treatment or control group based on their schedules and

the interventionists' availability, so assignment to group was only quasi-random. Interventionists were not blind to the purpose of the study and adherence and fidelity to the protocol was not assessed, although interventionists were trained and given a script of the protocol to follow. Although there is no reason to expect that physical therapists' assignments to groups affected the results and groups did not differ on pretest measures ($n = 40$), the post-hoc analysis of only those who completed the full protocol did indicate a significant difference in pretest scores on the satisfaction with life measure. Additionally, there is no conclusive literature on a specific "threshold" amount of gratitude interventions needed in order to create its positive effects. Previous studies have ranged in time between 2 to 10 weeks with different amounts of gratitude interventions given per week with different outcomes. Therefore, although it was believed that four weeks of interventions would be sufficient, it is possible that the study did not provide enough gratitude interventions or allow enough time to detect physical health changes or changes in the other variables.

Future Research

Based on the findings of this study, it is important for researchers to continue to examine this area in order to determine more conclusive evidence. As with any type of real world study, certain factors such as attendance, correct estimation of completers for pre and post measures, and potential incentives for participants would be important when considering future clinical research. Staffing components may also be helpful to be aware of, as not having interventionists on site full-time created unforeseen issues. Finally, meetings with the entire physical therapy staff to address implementation and changes, as well as setting up visual cues within the office, were helpful practices throughout.

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Table 1

Means, Standard Deviations, and Differences Between the Groups on Study Variables

Variable	<u>Control Group</u>		<u>Experimental Group</u>		<i>F</i>	<i>p</i>	η^2
	Pretest <i>M (SD)</i>	Posttest <i>M (SD)</i>	Pretest <i>M (SD)</i>	Posttest <i>M (SD)</i>			
AM-PAC	44.00 (15.79)	45.83 (18.47)	42.75 (11.26)	49.50 (12.01)	1.592	.243	.17
SWLS	25.50 (6.22)	24.00 (7.18)	18.60 (3.50)	18.80 (2.77)	.553	.476	.06
GQ-6	38.50 (6.65)	40.83 (2.40)	35.40 (8.26)	35.60 (4.15)	.804	.393	.04

Note. AM-PAC = Activity Measure for Post Acute Care. SWLS = The Satisfaction with Life Scale. GQ-6 = The Gratitude Questionnaire.

Appendix A

IRB

Hello,

The University of Memphis Institutional Review Board, FWA00006815, has reviewed and approved your submission in accordance with all applicable statuses and regulations as well as ethical principles.

PI NAME: Suzanne Lease

CO-PI: Adam Fishel

PROJECT TITLE: A New Tool for the Toolbox: Gratitude Interventions with Physical Therapy Patients.

FACULTY ADVISOR NAME (if applicable):

IRB ID: #4343

APPROVAL DATE: 10/21/2016

EXPIRATION DATE: 10/21/2017

LEVEL OF REVIEW: Full Board

Please Note: Modifications do not extend the expiration of the original approval

Approval of this project is given with the following obligations:

- 1. If this IRB approval has an expiration date, an approved renewal must be in effect to continue the project prior to that date. If approval is not obtained, the human consent form(s) and recruiting material(s) are no longer valid and any research activities involving human subjects must stop.**
- 2. When the project is finished or terminated, a completion form must be completed and sent to the board.**
- 3. No change may be made in the approved protocol without prior board approval, whether the approved protocol was reviewed at the Exempt, Expedited or Full Board level.**
- 4. Exempt approval are considered to have no expiration date and no further review is necessary unless the protocol needs modification.**

Thank you,

James P. Whelan, Ph.D.

Institutional Review Board Chair

The University of Memphis.

4343 A New Tool for the Toolbox: Gratitude Interventions with Physical Therapy Patients.

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Approval Date: 10-21-2016	Expiration Date: 10-21-2017	Organization: N/A	Active Submissions: N/A
Sponsors: N/A	Closed Date: N/A	Current Policy Pre-2018 Rule	

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