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The Relationship of Rehabilitation Therapy Clients and Grit: A Pilot Study

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THE RELATIONSHIP OF REHABILITATION THERAPY CLIENTS AND GRIT: A PILOT STUDY

By

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DEDICATION

This thesis is dedicated to my parents, who taught me about true grit and perseverance.

ABSTRACT

Client experience is an important consideration in physical and occupational therapy (known as rehabilitation therapy.) The personality trait of grit has been studied in many different settings and populations and could have an impact on rehabilitation therapy clients' perceptions and experiences. The purpose of this study is to identify the relationship between scores on Dr. Angela Duckworth's Grit Scale (that identifies the presence and strength of grit) and perceptions of experiences by rehabilitation therapy clients. Seven males and twelve females (age: 56.78 ± 15.83) participated in this study. The Grit Scale was used to assess participants' grit. Multiple-choice questions were used to collect data on participants' experiences in rehabilitation therapy. This study found moderate positive correlations ($r = .432$, $p = .065$) between grit and positive perceptions of progress in therapy, as well as between grit and positive reasons behind completing assigned at-home exercises ($r = .45$, $p < .05$), an important aspect of rehabilitation success. Studying grit is important to the fields of physical and occupational therapy because clients with different levels of grit may view their challenges in therapy differently accordingly and understanding grit in clients may help therapists improve client experience and progress in treatment. Findings from this study can be used to help improve rehabilitation therapy clients' experiences.

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CHAPTER 1: INTRODUCTION

Occupational and physical therapy (known collectively as rehabilitation therapy) have a common perception as being painful, stressful, and challenging for the clients involved (Sottile et al., 2015.) While this is not always true, rehabilitation therapy certainly can be challenging. Rehabilitation therapy in all its forms can be physically, mentally, and emotionally demanding. Recovering from the various injuries and conditions that require rehabilitation therapy takes time, effort, and persistence through discomfort and pain.

In today's healthcare system, a client's opinions of their therapist and therapy can have a powerful impact on their overall outcomes. Factors between health care providers and clients have varying impacts on client compliance and cooperation with treatment. If a client perceives their therapy as being too painful, too stressful, or too time-consuming, they may rush through therapy, not give their best effort to complete the exercises during their sessions, or terminate therapy entirely (Sluijs et al., 1993). This may prevent healing or alleviation of pain and other symptoms, and their condition may worsen as a result.

Dr. Angela Duckworth identified the concept of grit as distinguishing those who were more likely to persevere through various challenges involved in a given pursuit (Duckworth, 2007, 2019; Duckworth & Gross, 2014). While many studies have been conducted on various populations to identify correlations between grit, perception of the activity, and success, the relationship between grit and the perceptions of occupational and physical therapy clients has not as yet been studied.

Grit has been studied in many populations, settings, and in various pursuits (Duckworth, 2007, 2019; Duckworth & Gross, 2014; Hagger & Hamilton, 2018; Zamarro et al., 2020). Understanding rehabilitation clients' levels of grit and their perceptions of their therapy journey may benefit physical and occupational therapists when helping their clients through the process more efficiently and effectively and use strategies to further develop grit in their clients. Understanding and utilizing grit could also improve adherence to at-home exercises, an important part of the rehabilitation process. The purpose of this study is to determine the strength of grit in rehabilitation therapy clients and to determine the relationship between grit and a positive perception of progress, pain, and effort in rehabilitation therapy clients.

SIGNIFICANCE OF STUDY

This study examines the relationship between levels of grit and clients' opinions about their physical and occupational therapy experiences. Aspects of grit can be useful to know and understand as they may aid therapists in helping their clients have more positive and productive experiences in rehabilitation therapy; understanding grit may also aid clients in understanding themselves and taking an active interest in their own recovery.

HYPOTHESES

1. Rehabilitation therapy clients will exhibit different levels of grit, as measured by the Grit Scale.
2. Levels of grit, in relation to rehabilitation therapy experiences, will not differ significantly between male and female participants.
3. Higher levels of grit will be associated with more positive rehabilitation therapy experiences.

CHAPTER 2: REVIEW OF LITERATURE

According to Duckworth et al. (2007), grit is "perseverance and passion for long term goals" (Duckworth et al., 2007, para. 5) It has also been defined as the continual pursuit of a certain goal despite setbacks by Duckworth (2007) and others using her construct. Groups such as West Point cadets, adolescent spelling bee competitors, and Ivy League undergraduate students were found to have strong correlations with grit and higher levels of success in their respective endeavors (Duckworth et al., 2007). In relation to other aspects of success, such as conscientiousness and passion, the most significant aspects of grit are persistence and consistency (Duckworth et al., 2007). Occupational and physical therapy often involve long-term goals for a client's recovery that can be challenging, painful, and/or involve setbacks. Higher levels of grit could help a client overcome these setbacks to lead to more positive experiences in therapy and more efficient results medically.

Grit is also connected with other personality traits linked to success. Grit is very strongly correlated with Big Five conscientiousness, according to one of Duckworth's grit studies (Duckworth et al. 2007). Conscientiousness is one of the personality traits of the Big Five personality assessment, characterized by organization, self-control, deliberation, and reliability (Duckworth et al. 2007). All of these traits can be logically associated with success in rehabilitation, especially concerning exercises completed outside of an outpatient clinic. Conscientiousness and its importance in therapy success is supported by Lippke, Pomp, and Flieg's (2018) research on conscientiousness and planning in rehabilitation activities. They had 136 adults who had needed either cardiac or orthopedic rehabilitation answer questions regarding

their post-rehabilitation physical activity, their planning for post-rehabilitation, and their overall conscientiousness. The analysis revealed the most conscientious clients not only were more likely to turn their planning into actual behaviors completed, they were more likely to consistently complete their planned activities. This analysis is important to this study because grit and conscientiousness are positively related, and conscientiousness was correlated with the completion of extra-rehabilitation activities.

Some people exhibit more tolerance to pain and approach challenges better than others. While self-management has been shown to be an effective way to manage chronic pain, researchers Nilakantan, Johnson, and Mackey (2013) cite the need for more research on traits such as grit during alleviation of and recovery from chronic low back pain. They researched grit using the Grit Scale, among other questionnaires, in samples of healthy adults, adults having recovered from low back pain, and adults experiencing chronic low back pain. In their study, clients with chronic lower back pain scored higher on the Grit Scale than the average adult older than 25 years. This is important because the higher levels of grit were associated with the presence of chronic pain, suggesting that chronic pain is a challenge that could lead to the development of higher levels of grit, or that grit could lead to higher pain tolerance. The authors emphasized the need for more exploration into explanatory factors for this correlation, including quantitative sensory measures of pain tolerance, age, and use of any analgesic medication including opioids, but the result is still a relevant and fascinating insight into the relationship between pain and grit. This could be important in the initial levels of and development of further grit in rehabilitation therapy clients, many of whom deal with chronic pain due to their challenging conditions that warrant rehabilitation.

Both occupational and physical therapy emphasize individual treatment, holistic treatment of body and soul, and personal interaction of the therapeutic professional with each client (Hamasaki et al., 2018). As such, therapists' actions and clients' perceptions of their experiences can have a huge impact on their healing and recovery. Perceptions of experiences and of therapist are important to the study of grit and physical and occupational therapy because therapists' understanding of grit and its impact on clients as well as clients' perceptions as related to their individual grit could help clients have a better, more productive experience in therapy.

Pain can be analyzed using a biopsychosocial model, as elaborately developed by Gatchel (2004.) He breaks concepts of illness and disease down as having physical, psychological, and social components, all of which affect the individual's perception of their condition. His approach for understanding pain has been used to treat chronic and prevalent diseases such as diabetes and defines illness as being the subjective perception of disease by the individual experiencing it. This concept of illness and disease is important to the purpose of this study because similar individuals with similar conditions may react to their condition and their therapy very differently. Reactions could depend on the respective individuals' perspectives, history, secondary gain (a positive advantage that could accompany their condition or symptoms), emotional processing of the condition, and its psychosocial consequences on the individual (such as if the condition resulted in the loss of independence and needing reliance on others). These differences should be acknowledged by the therapist. Utilizing the concept of grit in rehabilitation therapy may enhance a successful outcome. According to Gatchel (2004), the most effective methods of treating and working through pain involve not only assessment of the physical condition but also knowledge of the individual's perspectives on their pain, their

emotional state, and their previous experiences with pain and therapy. As occupational and physical therapists often work with clients for extended periods of time, they have potential opportunities to obtain information that can aid therapists in helping their clients. Understanding and even informally assessing clients' levels of grit, in addition to the standard evaluation of pain that therapists use to assess clients' conditions, could help therapists individualize treatments and attitudes for each client they work with.

Grit and effort are often related in many studies, with higher levels of grit predicting higher levels of effort, and higher levels of effort being correlated with higher scores on the Grit Scale (Hagger & Hamilton, 2018; Zamarro et al., 2020). Moore et al. (2018) studied grit as a form of a psychological factor that could impact cognitive and everyday functioning in persons with HIV. They found that, although adults living with HIV had lower scores on the Grit Scale, higher perseverance of effort (a subdomain of grit) in adults living with HIV was correlated with better neurocognitive performance and life independence. This relationship was not found to be significant in adults studied without HIV. Considering this factor, it can be hypothesized that higher perseverance of effort can be connected to higher levels of grit and autonomy in adults with chronic conditions. The connection between effort and grit is further supported by Hagger and Hamilton's 2018 study in which they obtained self-reported measures of grit, self-discipline, and effort on optional class-related activities in 110 students aged 12 to 14 years of age. Their results found that the amount of grit as related to the perseverance of effort in a task (as identified separately from grit as related to the persistence of interests) was positively associated with the effort the students put forth in the optional tasks. Effort is an important factor in completing both in-clinic and at-home exercises, and with grit and effort having a positive correlation, then grit scores could be predictive of the amount of effort reported by clients.

Grit could also potentially be involved in the client's perception of how effective therapy is for them. This study hypothesizes that a less gritty person would be less likely to believe that therapy has helped them greatly, while a more gritty person would be more likely to say that therapy has helped them, as they trust the process of therapy and believe that therapy is worth their time and effort.

Grit can be important to developing and maintaining autonomy—an important aspect of maintaining motivation under self-determination theory. Self-determination theory is and has been important to understanding motivation and behavior for many years, according to many psychologists and researchers. Among them, Ryan and Deci (2017) define autonomy as the basic need and ability to have control over one's experiences. Levels of independence and autonomy can aid understanding in the impact of grit on living and experiences, such as in rehabilitation therapy as examined in this study. Autonomy is also an important part of client success and experiences in physical and occupational therapy, as cited in the Code of Ethics for the American Occupational Therapy Association as a core value (*AOTA 2020 Occupational Therapy Code of Ethics,* 2020).

Multiple studies indicate that autonomy is an important part of a positive rehabilitation experience, and grit could potentially have a significant effect on autonomy in a positive way. Vainio and Daukantaitė (2015) found that grit is not enough to guarantee satisfaction with life overall, but factors like pursuing goals and a sense of coherence are significant mediators towards the positive relationship grit has with many aspects of well-being. Pursuing goals is an important part of the rehabilitation process. Jin and Kim (2017) observed that both grit and autonomy seemed to reduce depression to some extent in a sample of 455 Korean adults, which can be linked to an overall positive experience in therapy. Nelson and Payton (1997) surveyed

fifteen adult occupational therapy patients and found that although patients were involved in planning their therapies to some extent, the participation level in planning and subsequent results overall were mixed, indicating a need for greater emphasis on patient participation and involvement in goal setting, specifically in occupational therapy. Lim et al. (2007) studied occupational therapy patients in an inpatient setting and found that the ability to have input and choice in their rehabilitation activities was linked to higher patient satisfaction.

Gender has been shown to have an overall weak relationship with grit, although some studies have reported gender differences. In Criticos et al.'s 2020 study of nine collegiate track and field throwers, males reported higher grit scores than females, and the female grit scores were shown to be variable over the six-week study period, with scores correlating with performance results in terms of improvement or decline. It was noted that the small sample size and external factors, such as measured anxiety, perceived competence, and team dynamics between the male athletes and female athletes respectively could have had a mitigating effect on the gender differences and results of the grit surveys. Additionally, in a study on grit, gender, and academic success, Whipple and Dimitrova-Grajzl (2020) found that male students at Virginia Military Academy not only had higher grit scores on average but had a positive moderating effect on male students' grade point averages in comparison to their female counterparts. The authors of the aforementioned study did note that this difference may be able to be attributed to differences in socialization between males and females (for example, males would identify themselves more strongly with being a hard worker than females), as well as that the highly competitive nature and challenges of attending Virginia Military Institute, for females specifically, may have mitigated the effect that grit had on academic scores for females. Most powerfully, in Crede, Tynan, and Harms' 2017 meta-analysis of grit literature, they found upon

examination of 73 studies assessing 66,807 individuals, gender had a very weak relationship with grit.

Wellbeing is an important aspect to consider when measuring quality of life, which is important in the condition of a rehabilitation therapy client, as one of the universal goals of physical and occupational therapy is to improve individual quality of life ("About AOTA", 2021; "Standards of practice for physical therapy", 2019). Sharkey et al. (2017) surveyed adolescents and young adults with chronic medical conditions and found that grit was positively associated with better emotional well-being and lessening of depressive and anxious symptoms. This is important because the pains and inconveniences of a chronic medical condition may be analogous to the injuries and ailments of occupational therapy patients, and the amount of grit they have may lead to more consistent and positive perceptions of their occupational therapy.

Grit also predicted success using the transtheoretical model for different levels of exercise behavior. Reed et al. (2012) reported that grit, in contrast with the personality trait of conscientiousness, significantly predicted the transtheoretical model stage (maintenance, action, preparation, contemplation, precontemplation) for both high- and moderate-intensity exercise behavior. While these same results did not occur for low-intensity exercise behavior (and therapy may or may not be considered to have varying intensities of exercise behaviors, depending on the patient), more research is necessary on personality traits such as grit and their effects on exercise behaviors and therapy activities. It could be that higher levels of grit have a significant impact on the stage of change and therefore influence the client completing and maintaining exercises outside of their outpatient clinic at home, an important part of success and healing in rehabilitation therapy.

Additionally, therapist understanding of grit may improve client satisfaction. Client satisfaction has become an issue with ever-increasing importance in healthcare, as clients often have more options for outpatient care and rehabilitation and can choose where and how to seek treatment. Client satisfaction with therapy experiences could be critical to the physical improvement of their condition. Roush (1995) found that patients valued friendliness and interpersonal skills over the technical skills of their therapist. The client's view of their rehab experience is influenced by their interaction with their therapist; if the therapist can interact with clients better due to their understanding of grit and other personality traits, patients may be more satisfied and work harder to improve. Additionally, as mentioned above, Lin et al. (2007) found that allowing inpatient clients more autonomy in their programs increased their satisfaction with their treatment.

Adherence to at-home exercise is often an important part of a client's recovery, regardless of the setting they receive treatment from professionals in. Constantinescu et al. (2017) proposed a number of methods to increase adherence to at-home swallowing therapy exercises, discussing how grit could be used in these applications to improve client adherence to swallowing exercises, which can be tedious, uncomfortable, or painful. They support this with Duckworth's research and hypothesize that past experiences influence the development of grit which may impact how clients respond to their swallowing therapy. They suggest that adherence and effort can be increased by involving clients in the therapy experience and increasing the choice clients have in their specific treatments. This reasoning can be applied to clients outside of an at-home setting, such as in an outpatient setting. Kawasaki and Tozawa (2020) also examined grit in relation to structured physical activity in adults with low back pain. They

reported a positive relationship between grit and a longer duration of physical activity to rehabilitate and alleviate low back pain.

While the concept of grit has been theorized about and studied in human behavior for centuries, Duckworth's landmark research in 2007 set the stage for many more studies with different populations, moderating factors, and dependent variables, there are still many facets and potential impacts of grit yet unstudied. Past studies have established that grit, as measured by the Grit Scale, can and does have a relationship to and an impact on success in different and variable endeavors, including challenges such as athletic pursuits and tolerance of chronic pain. Additionally, grit has been shown to have a relationship to other qualities involved in success, including autonomy, life satisfaction, conscientiousness, and wellbeing. Although there has been research on some of these qualities in the setting of physical or occupational therapy, these qualities and grit have yet to be connected in the understanding of clients' perceptions of their experience, which are important in the overall outcomes of the clients in their recovery. Due to the lack of research in this area, this study aims to identify if occupational and physical therapy clients have grit, the opinions of said clients on their experiences and if Grit Scale scores have any relationship—positive, negative, or otherwise—to those overall opinions of physical and occupational therapy clients about their therapy experiences.

CHAPTER 3: METHODS

Participants

Participants in this study were adult rehabilitation therapy clients undergoing physical or occupational therapy in one of three outpatient clinics in northern Mississippi. The sample consisted of nineteen respondents: seven males and twelve females. The average age of respondents was 56.78 years, with a standard deviation of 15.83, with one respondent not providing their age.

Procedure

After being recruited by therapists in their clinic, participants filled out a paper survey approved by the University of Mississippi Institutional Review Board. The survey took approximately ten to twenty minutes. All participants and therapists were notified that the surveys were anonymous and confidential. Upon completion, surveys were returned to the therapist, stored in their file cabinets, and later collected by the researcher.

Measures

Clients were asked to complete a questionnaire survey about themselves and their experiences in rehabilitation therapy. The survey consisted of Duckworth's Grit Scale, several therapy-related questions, and demographic questions. The full survey as presented to respondents can be found in the Appendix on page 41.

Grit Scale

The first set of questions consisted of Angela Duckworth's Grit Scale. Duckworth (2007, 2019) originally developed the scale to study West Point cadets, but the scale has been used to

study many other populations in different settings. Responses were based off of a modified Likert-type scale in which, depending on the question, 1=Very much like me or Not like me at all. Each type of response coding to the questions will be identified in Table 1 below. Questions and responses had varied coding to ensure participant honesty and reading of the questions thoroughly.

Therapy-Related Questions

The second part of the survey consisted of questions about the client's therapy experience, if they believed therapy helps them, and if they completed their at-home exercises, along with responses about why they did or did not complete their exercises.

Demographic Questions

The final questions consisted of demographic questions: how long the client had been participating in therapy, if the client was male or female, and the client's age in years.

Statistical Analysis

Statistics were collected by the Statistical Package for Social Sciences (IBM SPSS Statistics for Windows, Version 27, Armonk, NY, USA). A two-tailed t-test was run to find the relationship between gender and the survey results, a Pearson correlation was conducted to find the relationship between the results of the therapy-related questions and Grit Scale scores, and a Pearson chi-squared analysis of the Grit Scale scores in relation to the demographic variables was conducted as well. Significance was set at $\alpha = 0.05$.

CHAPTER 4: RESULTS

Overall, respondents scored an average score of 3.88±.39 on the Grit Scale. Out of a possible 5, the lowest score was 3.08, and the highest score was 4.583.

Responses of male and female participants were compared for significant differences. Overall, males had a higher Grit Scale average (Mean = 3.99, SD = .27) compared to the females (Mean = 3.82, SD = .45), but this difference was not found to be significant ($t = .899$, $p > .05$). Of the twelve Grit Scale questions, only one question showed a significant difference between males and females ($t = 2.15$, $p < .05$). Q2 asks respondents to identify themselves with the statement "I have overcome setbacks to conquer an important challenge." For this question, out of a possible score of 5, the male mean was 4.86, SD = .378, and the female mean was 4.08, SD = .90. The other eleven questions on the Grit Scale did not show a significant difference between male and female responses.

Table 1. Grit Scale Responses (n=19)

Question	Mean ±SD	Response	Frequency	Percent
2. I have overcome setbacks to conquer an important challenge.	4.37±.81	Very much like me=5 Mostly like me=4 Somewhat like me=3 Not much like me=2 Not like me at all=1	11 4 4 0 0	57.9% 21.1% 21.1% 0% 0%
3. New ideas and projects sometimes distract me.	3.21±1.05	Very much like me=1 Mostly like me=2 Somewhat like me=3 Not much like me=4 Not like me at all=5	1 3 9 3 3	5.26% 15.79% 47.37% 15.79% 15.79%
4. My interests change from year to year.	3.42±.99	Very much like me=1 Mostly like me=2 Somewhat like me=3 Not much like me=4 Not like me at all=5	1 2 6 8 2	5.26% 10.52% 31.58% 42.11% 10.52%
5. Setbacks don't discourage me.	3.47±1.01	Very much like me=5 Mostly like me=4 Somewhat like me=3 Not much like me=2 Not like me at all=1	2 10 3 2 1	10.52% 52.63% 15.79% 10.52% 5.26%
6. I have been obsessed with a certain idea or project for a very short time but later lost interest.	3.73±.91	Very much like me=1 Mostly like me=2 Somewhat like me=3 Not much like me=4 Not like me at all=5	0 1 8 5 5	0% 5.26% 42.11% 26.32% 26.32%
7. I am a hard worker.	4.84±.36	Very much like me=5 Mostly like me=4 Somewhat like me=3 Not much like me=2 Not like me at all=1	16 3 0 0 0	84.21% 15.79% 0% 0% 0%

8. I often set a goal but later choose to pursue a different one.	3.89±.85	Very much like me=1 Mostly like me=2 Somewhat like me=3 Not much like me=4 Not like me at all=5	0 1 5 8 5	0% 5.26% 26.31% 42.11% 26.32%
9. I have difficulty maintaining my focus on projects that take more than a few months to complete.	3.68±1.03	Very much like me=1 Mostly like me=2 Somewhat like me=3 Not much like me=4 Not like me at all=5	1 1 5 8 4	5.26% 5.26% 26.32% 42.11% 21.10%
10. I finish whatever I begin.	4.32±.57	Very much like me=5 Mostly like me=4 Somewhat like me=3 Not much like me=2 Not like me at all=1	7 11 1 0 0	36.84% 57.89% 5.26% 0% 0%
11. I have achieved a goal that took years of work.	4.00±.86	Very much like me=5 Mostly like me=4 Somewhat like me=3 Not much like me=2 Not like me at all=1	6 8 4 1 0	31.58% 42.11% 21.10% 5.26% 0%
12. I become interested in new pursuits every few months.	3.47±.94	Very much like me=1 Mostly like me=2 Somewhat like me=3 Not much like me=4 Not like me at all=5	0 3 7 6 3	0% 15.79% 36.84% 31.58% 15.79%
13. I am diligent.	4.16±.59	Very much like me=5 Mostly like me=4 Somewhat like me=3 Not much like me=2 Not like me at all=1	5 12 2 0 0	26.32% 63.16% 10.53% 0% 0%

Total Grit Scale Score	3.88±.39	3.08 3.33 3.5 3.583 3.667 3.75 3.833 3.916 4 4.083 4.25 4.416 4.583	1 1 1 1 2 2 1 4 1 1 1 1 2	5.26% 5.26% 5.26% 5.26% 10.53% 10.53% 5.26% 21.05% 5.26% 5.26% 5.26% 5.26% 10.53%

For the therapy-related questions, results are listed in Table 2, and were varied. On a scale from 0 to 10 with 0 being no effort and 10 being the highest effort, effort was assessed with a mean score of 8.42, SD = 1.72. Pain was perceived on a similar 0 to 10 scale and a mean score of 4.63 was calculated, with a standard deviation of 2.13.

In these questions, there were two significant differences between male and female responses. The first was in the question concerning the consistency of completion of at-home exercises. Using a chi-squared analysis, there was a significant difference ($X^2 = 8.06$, $p = .018$) found in the responses to this question; all twelve male respondents selected "always" for their consistency in completion, and only four of ten applicable females selected "always." Six females selected "sometimes," and two females reported not being assigned at-home exercises. Additionally, there was a significant difference ($X^2 = 8.69$, $p = .003$) between males and females in the responses to the question if they had been in physical or occupational therapy before. All twelve surveyed females had been in physical or occupational therapy before, but only three of seven surveyed males had been.

Participants were asked if they believed that outpatient therapy had helped them, referred to here as "progress in therapy." Participants were asked if rehabilitation therapy had helped them using a Likert-type scale ranging from "It has helped me greatly" to "It has set me back greatly." The nineteen responses were universally positive, with all nineteen respondents answering that outpatient therapy had helped them either slightly or greatly. Fifteen respondents selected "It has helped me greatly" and four selected "It has helped me slightly." While not statistically significant at $\alpha = 0.05$, with a correlation coefficient of $r = .432$ and a significance of $p = .065$, there was a strong correlation approaching significance between Grit Scale scores and progress perceptions.

Respondents circled a variety of responses to the question "Is there a reason behind your completion or non-completion of these exercises?" The question refers to the at-home exercises many rehabilitation therapists assign to clients to assist in recovery and progress. Each response to this question and the related results from the other questions will be listed in the paragraphs below and examined further in the Discussion section.

None of the respondents selected the responses "The exercises are too painful or difficult to complete," or "I do not enjoy completing the exercises."

The "I think the exercises help me" response was the most common response to the question about completion or lack thereof of at-home exercises, with thirteen of seventeen participants choosing this response. Clients who provided this response had a mean Grit Scale score of 3.87, SD = .32. They had a mean perception of pain score of 4.6, SD = 2.09, and a mean perception of effort score of 8.5, SD = 1.69. Nine participants who chose this response said they completed at-home exercises "always" and four participants reported "sometimes."

Five of seventeen respondents circled the response "I feel better after completing the exercises." Clients who provided this response had a mean Grit Scale score of 4.05, SD = .33. They had a mean perception of effort score of 8.2, SD = 1.72, and a mean perception of pain score of 4.4, SD = 1.74. Four participants who chose this response said they completed at-home exercises "always" and only one participant selected "sometimes."

Four clients circled the response indicating that they cared what their therapist thought of them. Clients who provided this response had a mean Grit Scale score of 4.10, SD = .35. They had a mean perception of pain score of 4.25, SD = 1.87 (sample mean was 4.63), and a mean perception of effort score of 8.0, SD = 1.92 (sample mean was 8.42.) Additionally, Pearson's

correlation revealed a significant positive relationship between grit scores and the response "I care what my therapist thinks of me" ($r = .45$, $p < .05$).

One participant wrote next to "Other reason" the phrase "time!" This participant had the lowest grit score (3.083) of the nineteen participants. They indicated that their therapy had "helped them slightly" and that their pain level was a 5 of 10, while their effort level was an 8 of 10. They indicated that they "always" completed their at-home exercises. Additionally, a Pearson's correlation determined a significant negative relationship was found between grit and the response "the exercises take too much time" with a correlation coefficient of $r = -.49$, $p < .05$, showing that this response was connected with lower Grit Scale scores.

One participant (P19) marked that they felt worse after completing the exercises. Their Grit Score was 3.916, their pain score was 6, and their effort perception score was 7. They said that therapy had helped them slightly and that they "sometimes" completed their assigned at-home exercises.

Table 2. Therapy-Related Questions Responses (n=19)

Question	Mean ±SD	Response	Frequency	Percent
On average what is your effort in your therapy sessions?	8.42±1.72	0 1 2 3 4 5 6 7 8 9 10	0 0 0 0 0 3 0 1 4 4 7	0% 0% 0% 0% 0% 15.79% 0% 5.29% 21.05% 21.05% 36.84%
On average what is your pain level in your therapy sessions?	4.63±2.13	0 1 2 3 4 5 6 7 8 9 10	1 0 3 2 1 6 2 2 2 0 0	5.29% 0% 15.79% 10.53% 5.29% 31.58% 10.53% 10.53% 10.53% 0% 0%
How do you perceive your progress in your therapy so far?	NA	It has helped me greatly. It has helped me slightly. It has not helped me or set me back (neutral). It has set me back slightly. It has set me back greatly.	15 4 0 0 0	78.95% 21.05% 0% 0% 0%
Are you given any at-home exercises to complete by your therapist?	NA	Yes No	17 2	89.4% 10.52%

If so, with what consistency would you say you complete them?	NA	Always Sometimes Rarely Never Not applicable	11 6 0 0 2	57.90% 31.58% 0% 0% 10.53%
Is there a reason behind your completion or non-completion of these exercises?	NA	I think the exercises help me. The exercises take too much time to complete. The exercises are too painful or difficult to complete. I feel better after completing the exercises. I feel worse after completing the exercises. I do not enjoy completing the exercises. I care about what my therapist thinks of me. Other reason Not applicable	15 1 0 6 1 0 5 0 0	53.57% 3.57% 0% 21.43% 3.57% 0% 17.85% 0% 0%

Table 3. Demographic Information (n=19)

Question	Response	Frequency	Percent
Approximately how long have you been participating in therapy?	1-4 weeks 1-2 months 2-4 months 4-6 months 6 or more months	7 4 5 1 2	36.84% 21.05% 26.31% 5.26% 10.52%
Is this your first time in outpatient physical or occupational therapy of any kind?	Yes No	4 15	21.05% 78.95%
How old are you?	19 32 41 42 45 47 50 61 65 67 68 71 74 Prefer not to answer	1 2 2 1 1 1 1 1 2 2 2 1 1 1	5.26% 10.52% 10.52% 5.26% 5.26% 5.26% 5.26% 5.26% 10.52% 10.52% 10.52% 5.26% 5.26% 5.26%
What is your gender?	Male Female Other Prefer not to answer	7 12 0 0	36.84% 63.16% 0% 0%

CHAPTER 5: DISCUSSION

This study investigated the correlation between scores on the Grit Scale and rehabilitation therapy clients' opinions about their therapy experiences. This study is a pilot study, and its cross-sectional methods were a way to identify if grit had any relationship to rehabilitation therapy experiences. Determining grit's relationship to rehabilitation therapy experiences and perceptions is beneficial for helping to improve those experiences. The main findings of this study were that rehabilitation therapy clients exhibit different levels of grit, that grit has a moderate impact on many factors relating to the perception of the experience of rehabilitation therapy, and that further study on these characteristics would be useful to the field of knowledge as a whole.

Respondents in this survey demonstrated different levels of grit as measured by the Grit Scale. On a scale measured from 1— "not at all gritty"— to 5—"extremely gritty," clients scored anywhere from 3.08 to 4.583 on the Grit Scale, with a mean of 3.88 ± .39. These results show that rehabilitation therapy clients have different levels of grit that may impact their therapy experiences, but as a whole, rehabilitation therapy clients have moderate levels of grit. For reference, Duckworth (2016) used a large sample to identify the average score for American adults as 3.8. Further research is warranted to better understand the levels of grit that rehabilitation therapy clients exhibit over time, as this study examined grit at a single point in time.

Overall, males had a higher Grit Scale score than females in this study, but this discrepancy was not found to be statistically significant. This result aligns with the conclusion drawn by Crede, Tynan, and Harms in their 2017 meta-analysis of grit literature that the relationship between grit and gender is very weak. In this investigation, gender was not a significant predictor of grit.

Only one question in the Grit Scale showed a significant difference between the male and female responses. Question 2, "I have overcome setbacks to conquer an important challenge," had a significant difference between the male and female responses when examined in a t-test. Since there were no significant differences for the majority of questions and the Grit score overall, it can be reasoned that no different steps need to be taken in rehabilitation therapy with males and females as a whole, but since there is a significant difference in the perception of overcoming setbacks to address challenges in Q2, there may be a need to address female setbacks in rehabilitation differently than male setbacks. Additionally, further data could be gathered from participants to identify what kinds of and how many setbacks they have experienced in their lives so far.

Rehabilitation experiences were collected in the questions about pain, effort, progress, consistency, and reasons behind consistency in completing at-home exercises. Overall progress perceptions were gathered with a simple Likert-type scale, and all nineteen responses were positive. Since the correlation is approaching significance and is strong, the correlation could mean that, the more grit a client had, the more likely they would be to select that their therapy was helping them.

Clients were asked to provide the reasons behind their completion or non-completion of their assigned exercises. Some respondents circled one response, while others selected multiple

responses or wrote in their own. In the following paragraphs, each response will be analyzed and compared to the Grit Scale scores of the participants that provided said responses, as well as their average perception of pain, perception of effort, and perceived progress in therapy. It is important to mention that two participants (P1 and P2) noted that they were not assigned at-home exercises but answered the question about completing or not completing the exercises anyway, in the form of responding that the exercises helped them (P1 and P2), that they felt better after completing the exercises (P2), and that they cared what their therapist thought of them (P2). While this cannot be applied to assessing if grit had an impact on their at-home exercises, it can be inferred that the clients believed that their exercises completed in-clinic helped them and made them feel better, as well as that they cared about their therapist's opinion of them. Their responses will not be included in the analysis of the adherence to and impact of at-home exercises, but their applicable answers will still be used in the overall analysis of grit and its relationship to perception of therapy experiences.

Two statistically significant differences were reported in the therapy-related questions between males and females. The difference in the consistency question—with all males reporting "always" and only 33% of females selecting the same, and with 50% of females circling "sometimes" and 16% not being assigned at-home exercises—together with the higher average grit responses from the males, could indicate that the males' higher grit is connected to the consistency of completion. A larger sample of both males and females could strengthen these results. All twelve females surveyed had been in physical or occupational therapy before, and this could have a yet-unrecognized impact on their Grit Scale scores as well as their therapy experiences. Further research is warranted on the relationship between gender and grit in rehabilitation therapy clients.

The “I think the exercises help me” response was the most common response to the question about completion or lack thereof of at-home exercises, with thirteen of seventeen eligible participants choosing this response. While choosing this response was not significantly correlated with grit scores, the responses do demonstrate evidence of a positive therapy outcome. Believing that the exercises were beneficial to their overall progress can indicate that not only did clients complete the exercises consistently and competently enough to experience progress both inside and outside of the clinic therapy, but that the clients were gritty enough to stick with their exercises in order to accomplish that progress.

“Feeling better” after completing the at-home exercises is an important and motivating factor in completing any assigned exercises, which is why it was addressed in this survey. This response, while not statistically significant, is approaching significance and has a moderately strong correlation with Grit scores ($r = .41$, $p = .082$). It could be considered an aspect of wellbeing, and grit was connected to overall wellbeing by Sharkey et al. (2017). Feeling better after completing the exercises could motivate a client to continue their exercises in addition to their grit, and their grit could be linked to them feeling better about their progress.

The response “I care what my therapist thinks of me” highlights the importance of the relationship between the therapist and the client. Knowing that there is some form of accountability, whether real or perceived, in completing or not completing the exercises, could encourage the client to complete the exercises and emphasizes how important it is that the therapist builds and maintains a personable and stable relationship with each client. Understanding what could motivate each client, through grit and other measures, could improve the effectiveness of this relationship. Choosing this response was moderately positively correlated with grit scores. The average Grit Scale score in participants that answered this was

higher than the average (4.10 in comparison to the average of 3.88), which could mean that placing value on the therapist-client relationship could motivate the clients to have more grit. All four participants who chose this response said they completed at-home exercises "always." This could indicate that the perceived importance of their therapist's opinion, derived from their relationship in the outpatient therapy, could contribute to adherence, an important part of grit. As mentioned above, Constantinescu et al. used Duckworth's research on grit to support the claim that grit and adherence are related, which means grit could lead to adherence, which in turn could lead to more positive therapy experiences and outcomes. This is important because the relationship could be connected to adherence and adherence to grit, just as higher grit scores were more positively correlated with this response, indicating that it is important for therapists and clients to have a good relationship. This relationship can be a motivating factor in the completion of the assigned exercises.

One participant (P7) wrote next to "Other reason" the phrase "time!" It can reasonably be inferred that they meant that the exercises were time-consuming, especially given that their response to the question about consistently completing the exercises was "sometimes." Of the nineteen participants, P7 had the lowest grit score, of 3.083. They indicated that their therapy had "helped them slightly" and that their pain level was a 5 of 10, while their effort level was an 8 of 10. This lack of consistent adherence combined with the relatively low grit score further strengthens the relationship between grit and adherence as well as between grit and positive therapy experiences; in comparison, participants who marked that the therapy had helped them greatly had an average grit score of 3.96.

One participant (P19) selected that they felt worse after completing the exercises. While not necessarily an indication of non-completion of the at-home exercises (P19 marked they

"sometimes" completed the exercises), this negatively-coded response indicated that the client had a negative perspective on their therapy experience. This participant's pain score (6) was higher than the average pain score of 4.86 ± .378, which could have led to the selection of this response.

Limitations included a relatively small sample size. Due to the COVID-19 pandemic, it was difficult to interact with and reach many clients to complete this survey. Surveying more clients may lead to more significant findings or stronger correlations. Additionally, the self-reported data collected in this study introduces potential bias on the part of the respondents and their description of their experiences; this is why perceptions of the respondent were examined instead of qualitative data. A delimitation of the study is the small number of clinics that participants were recruited from; three outpatient rehabilitation therapy clinics in northern Mississippi may not provide a sample representative of the general population.

An interesting and possibly significant aspect not considered in this study is the relative severity of the injury or condition the client required physical or occupational therapy to treat. While the pain and effort scales gathered data on the client's individual perceptions about their conditions, they lacked context on the severity and other impacts of the condition. For example, two different clients may rate their pain a five out of ten, but one is rehabilitating a broken finger and the other is recovering from fasciotomy to correct Dupuytren's contracture (which involves zig-zag incisions to correct severe contraction of the fingers.) Including this data in the results would necessitate therapist participation in data collection but could provide more information and context to the scores of pain and effort perception and provide insight into how grit or lack thereof affected the perception in comparison of clients with similar pain levels.

Additionally, surveying more in-depth about the at-home exercises, including the perceptions of pain and effort during the at-home exercises in comparison to the perceptions of pain and effort of the exercises completed during the clinic therapy sessions, could provide additional insight into adherence and autonomy, important characteristics of grit. Individual therapists' understanding of and utilization of grit and other personality traits could also be examined for impact on experiences. In the future, a study could be conducted more in-depth, perhaps in a longitudinal case study format with one or a few individuals, using motivational interviewing, the Grit Scale, and similar perception of pain, effort, and progress measures to strengthen these correlations between grit and rehabilitation therapy experiences.

In conclusion, this study confirmed that physical and occupational therapy clients in this investigation have grit which means that they could view their therapy experiences differently as a result. Additionally, the results set the stage for future studies on grit and rehabilitation therapy clients. The moderate positive correlations found between grit and perceived progress and the emphasis on the relationship between client and therapist are important factors that could be used to improve clients' therapy experiences. The differences between male and female physical and occupational therapy clients could also be further explored. Additional research on grit and perceptions of physical and occupational therapy clients could be useful to strengthen the above-mentioned conclusions and contribute to more positive therapy outcomes.

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APPENDIX

Consent to Participate in Research

Study Title: Grit and Rehabilitation Therapy

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Key Information for You to Consider

- **Voluntary Consent**. You are being asked to volunteer for a research study. It is up to you whether you choose to participate or not. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate or discontinue participation.
- **Purpose**. The purpose of this research is to contribute to furthering research in the study of personality traits and rehabilitation therapy to help occupational and physical therapists help their clients more effectively
- **Duration.** It is expected that your participation will last twenty minutes or less.
- **Procedures and Activities.** You will be asked to complete a short survey consisting of multiple-choice questions.
- **Risks.** This survey has minimal risk.
- **Benefits**. Some of the benefits that may be expected include contributing to the field of study and physical and occupational therapy at large.
- **Alternatives.** Participation is voluntary and the only alternative is to not participate.

By checking this box I certify that I am 18 years of age or older.

What you will do for this study
At a convenient time before, during, or after your treatment session, you will fill out a short survey about your experiences in physical or occupational therapy and your perspective on yourself. The survey consists of 23 multiple choice questions, including demographic information, your thoughts about yourself, and your perspectives on your therapy experiences.

Time required for this study

This study will take no more than 20 minutes to complete.

Possible risks from your participation

There are no anticipated risks to you from participating in the study.

Benefits from your participation

You should not expect benefits from participating in this study. However, you might experience satisfaction from contributing to scientific knowledge. Also, answering the survey questions might make you more aware of habits you'd like to change – sometimes this can help lead to improved habits.

Confidentiality

All information in the study will be collected from you anonymously: it will not be possible for anyone, even the researchers, to associate you with your responses.

Right to Withdraw

You do not have to volunteer for this study, and there is no penalty if you refuse. If you start the study and decide that you do not want to finish, just stop filling out the survey. Whether or not you participate or withdraw will not affect your current or future relationship with the Department of Nutrition and Hospitality Management, or with the University, and it will not cause you to lose any benefits to which you are entitled.

IRB Approval

This study has been reviewed by The University of Mississippi's Institutional Review Board (IRB). The IRB has determined that this study fulfills the human research subject protections obligations required by state and federal law and University policies. If you have any questions or concerns regarding your rights as a research participant, please contact the IRB at (662) 915-7482 or irb@olemiss.edu.

Please ask the researcher if there is anything that is not clear or if you need more information. When all your questions have been answered, then decide if you want to be in the study or not.

Statement of Consent

I have read the above information. I have been given an unsigned copy of this form. By starting the survey, I consent to participate in the study.

Recruitment Script

Dear Potential Survey Participant,

My name is Kamilla Kisch, and I am a student in the Sally McDonnell Barksdale Honors College at the University of Mississippi. I am conducting a research study examining the impact of grit on rehabilitation therapy clients' experiences and you are invited to participate in the study. If you agree, you are invited to participate in a brief pen-and-paper survey.
The survey is anticipated to take no more than twenty minutes.
Participation in this study is voluntary. Your identity as a participant will remain anonymous and confidential during and after the study.
If you have any questions, please contact me at kmkisch@go.olemiss.edu or my advisor Dr. Melinda Valliant at valliant@olemiss.edu.
Thank you for your participation,

Kamilla Kisch
University of Mississippi

The amount of research and knowledge on different personality traits and how they can affect individuals in various activities has increased in recent years, but there is still a lot of research to conduct in the fields of occupational and physical therapy on this subject. This survey will contribute to furthering research in that field to help occupational and physical therapists help their clients more effectively. It is completely voluntary, anonymous, and confidential. Your responses cannot and will not be used to identify you in any way.
If you have any questions or concerns, please contact Kamilla Kisch at kmkisch@go.olemiss.edu or Dr. Melinda Valliant at valliant@olemiss.edu.

Are you 18 years of age or older and consent to your responses being used in research?
By circling yes, I affirm that I am 18 years of age or older and consent to my responses being used in research.

Yes No

I have overcome setbacks to conquer an important challenge.

Very much like me
Mostly like me
Somewhat like me
Not much like me
Not like me at all

New ideas and projects sometimes distract me.

Very much like me
Mostly like me
Somewhat like me
Not much like me
Not like me at all

My interests change from year to year.

Very much like me
Mostly like me
Somewhat like me
Not much like me
Not like me at all

Setbacks don't discourage me.

Very much like me
Mostly like me
Somewhat like me
Not much like me
Not like me at all

I have been obsessed with a certain idea or project for a very short time but later lost interest.

Very much like me
Mostly like me
Somewhat like me
Not much like me
Not like me at all

I am a hard worker.

Very much like me
Mostly like me
Somewhat like me
Not much like me
Not like me at all

I often set a goal but later choose to pursue a different one.

Very much like me
Mostly like me
Somewhat like me
Not much like me
Not like me at all

I have difficulty maintaining my focus on projects that take more than a few months to complete.

Very much like me
Mostly like me
Somewhat like me
Not much like me
Not like me at all

I finish whatever I begin.

Very much like me
Mostly like me
Somewhat like me
Not much like me
Not like me at all

I have achieved a goal that took years of work.

Very much like me
Mostly like me
Somewhat like me
Not much like me
Not like me at all

I become interested in new pursuits every few months.

Very much like me
Mostly like me
Somewhat like me
Not much like me
Not like me at all

I am diligent.

Very much like me
Mostly like me
Somewhat like me
Not much like me
Not like me at all

On average what is your effort in your therapy sessions? Circle the number that most closely reflects your effort. 0 is very, very light effort, 5 is somewhat hard effort, and 10 is very, very hard effort

0 1 2 3 4 5 6 7 8 9 10

On average what is your pain level in your therapy sessions? Circle the number that most closely reflects your pain level. 0 is no pain at all, 5 is moderate pain, and 10 is excruciating pain

0 1 2 3 4 5 6 7 8 9 10

How do you perceive your progress in your therapy so far? Circle the statement that most closely applies to you.

It has helped me greatly.
It has helped me slightly.
It has not helped me or set me back (neutral).
It has set me back slightly.
It has set me back greatly.

Are you given any at-home exercises to complete by your therapist?

Yes No

If so, with what consistency would you say you complete them?

Always Sometimes Rarely Never Not applicable

Is there a reason behind your completion or non-completion of these exercises? Circle the statement that most closely applies to you.
I think the exercises help me.
The exercises take too much time to complete.
The exercises are too painful or difficult to complete.
I feel better after completing the exercises.
I feel worse after completing the exercises.
I do not enjoy completing the exercises.
I care about what my therapist thinks of me.
Other reason
Not applicable

Approximately how long have you been participating in therapy?
1-4 weeks 1-2 months 2-4 months 4-6 months 6 or more months
Is this your first time in outpatient physical or occupational therapy of any kind?
Yes No
How old are you? _____ Prefer not to answer
What is your gender?
Male Female Other Prefer not to answer