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The Clinical Experience of Occupational Therapy and a Young Adult with Cerebral Palsy: A Case Report

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Cerebral palsy is the most common motor disability in childhood, typically diagnosed during the first or second year after birth (Birth Injury Help Center, 2022; Centers for Disease Control [CDC], 2022a; CDC, 2022b). The CDC reports that "Cerebral Palsy is characterized by abnormal brain development or damage to the developing brain that affects one's ability to control his or her muscles and posture" (Birth Injury Help Center, 2022; CDC, 2022a; CDC, 2022b; Mayo Clinic, 2022; National Institute of Neurological Disorders and Stroke [NINDS], 2022).

There are four different types of Cerebral Palsy, each with its own unique characteristics; spastic, dyskinetic, ataxic, and mixed (Birth Injury Help Center, 2022; CDC, 2022b). The National Institutes of Neurological Disorders and Stroke (2023), reported that the symptoms of Cerebral Palsy include:

> "...lack of muscle coordination when performing voluntary movements (ataxia); stiff or tight muscles and exaggerated reflexes (spasticity); weakness in one or more arm or leg; toe walking, a crouched gait, or scissored gait; variations in muscle tone, either too stiff or too floppy; excessive drooling or difficulties swallowing or speaking; shaking (tremor) or random involuntary movements; delays in reaching motor skill milestones; and difficulty with precise movements such as writing or buttoning a shirt; learning and intellectual disabilities" (Birth Injury Help Center, 2022; Mayo Clinic, 2022; NINDS, 2022).

Presence and severity of symptoms, along with lived experiences of those with Cerebral Palsy, vary per individual. While there is no cure for Cerebral Palsy, supportive treatments such as occupational therapy, medications and surgeries can improve their overall wellbeing and quality of life (CDC, 2022b).

Complex Barriers to Occupation for Young Adults with CP

In order for supportive treatments to increase well being and quality of life for individuals with Cerebral Palsy, they have to be tailored to their specific needs and concerns (Balandin et al., 2006; Ballin & Balandin, 2007; Hanes et al., 2019; Whitney et al., 2019). As children with Cerebral Palsy become adults, their health needs extend beyond physical and mobility impairments: pain, fatigue, mental health, and social challenges become more prominent (Hanes et al., 2019). Compared with adults without Cerebral Palsy, those with Cerebral Palsy have an elevated prevalence of mental health disorders, some of which may be more pronounced in patients with comorbid neurodevelopmental disorders (Whitney et al., 2019). Balandin et al. (2006) assessed the loneliness of older people with Cerebral Palsy using the UCLA Loneliness Scale (version 3); it was found that older people with Cerebral Palsy experience more loneliness, therefore a decreased quality of life, than older adults without disability (Balandin et al., 2006). Furthermore it was found that social networks (increased quantity and quality of social interactions), and means of communication were important for decreasing loneliness in older adults with Cerebral Palsy (Ballin & Balandin, 2007). Consequently, barriers in self care, mobility, community accessibility, communication, and social interaction impact physical and occupational functioning which decrease quality of life and the overall mental health status of individuals with Cerebral Palsy (Haak et al., 2009).

Barriers to Social Participation

For adults with Cerebral Palsy, these barriers can limit socialization in different contexts. The American Occupational Therapy Association (AOTA) defines social participation as "activities that involve social interaction with others, including family, friends, peers, and community members, and that support social interdependence" (2020). All three subcategories of social participation, community participation, intimate partner relationships, and peer group participation, as defined in the Occupational Therapy Practice Framework, 4th edition, are impacted by the limitations individuals with Cerebral Palsy experience. Community participation, such as within social clubs or religious groups, often require regular transportation in the community, making these gatherings inaccessible to some in this population. Opportunities to engage in intimate partner relationships, may be limited due to less functional mobility. Peer group participation is described as engagement in activities among others of a similar age, background, and who have similar interests (American Occupational Therapy Association, 2020). Adults with Cerebral Palsy may encounter barriers to communicate and physically gather together with like-minded individuals.

The problem that will be addressed in this case report is the lack of research regarding supports for and access to occupational participation for young adults with non-cognitive disabilities. The Occupational Therapy Practice Framework indicates that occupations are “central to a client’s health, identity, and sense of competence, and have a particular meaning and value to the client” (American Occupational Therapy Association, 2020). Occupations give meaning to life and help individuals find purpose in the activities that they need to do as well as want to do. The Occupational Therapy Practice Framework defined occupational participation as the “performance of occupations as the result of choice, motivation, and meaning with supportive context (including environmental and personal factors). Engagement includes objective and subjective aspects of clients’ experiences and involves the transactional interaction of the mind, body, and spirit” (American Occupational Therapy Association, 2020). Stover calls occupational therapists to advocate for continued expansion of habilitative care within the definition of medical necessity, or services that help one learn or maintain skills rather than regaining what has been lost. She asserts that doing so will increase access to services as current definitions of medical necessity are largely up to the interpretation of payors and physicians on an individual basis (Stover, 2016). The purpose of this case report therefore is to explore the clinical experience of an occupational therapist working with a young adult with Cerebral Palsy with non-cognitive disabilities in order to determine appropriate interventions for improved occupational performance and participation. Goals for this study, and for future research, include establishing resources for occupational therapists and occupational therapy interventions that improve the occupational performance, social participation and the occupational experience of young adults with Cerebral Palsy, without intellectual disabilities.

Methods

The authors started by conducting a formal review of literature. The review of the literature, though not meant to be a complete, in-depth overview of the current body of knowledge, revealed the importance of social interaction opportunities for young adults with physical disabilities (Ballin & Balandin, 2007; Pettersson & Rodby-Bousquet, 2021; Schenker et al., 2019; & Wiegerink et al., 2010) as well as demonstrated increased prevalence of depression, loneliness, and anxiety in individuals with Cerebral Palsy (Balandin et al., 2006; & Whitney et al., 2019). Based on that review of literature the authors chose physically disabled young adults without intellectual disabilities as the focus for this case report. The authors determined a case report to be the best method of descriptive study due to its unique ability to create and assess interventions through the lived experience of a physically disabled young adult without an intellectual disability.

Participants

The authors drafted a recruitment email (Appendix A) that was sent to an individual who was willing to participate in a case report. Inclusion criteria for this case report were as follows: physical limitations; ability to read and write in English; no cognitive impairment; and motivation to seek out social participation and formal education interventions. Exclusion criteria for this case report were as follows: being under the age of 18; being over the age of 35; living outside of the State of Michigan (the treating occupational therapist is licensed in Michigan); and/or a severe cognitive impairment. Consent for case report participation was obtained using a verbal consent documentation form created by the authors to accommodate the participant's mobility challenges (Appendix B). The consent form was sent to the participant via email. The authors met with the participant via Zoom, went over the consent form verbally after allowing them a chance to review it, and obtained verbal consent. All Zoom meetings with the participant were password protected and all information gathered is stored in a password-protected university cloud storage service.

Data Collection

Data collection and intervention implementation began in May 2023 and occurred through September 2023. Five entry-level master's occupational therapy students, under the supervision of a licensed occupational therapist, conducted portions of the evaluation and interventions. The participant was interviewed prior to beginning the intervention plan and agreed to be interviewed again at the cessation of the intervention plan. Following the clinical education model (Pashmdarfard et al., , 2020), one author conducted the first face-to-face interview with the participant under the supervision of a licensed occupational therapist from the authors' university. Following the evaluation, the development of interventions and ongoing changes to their intensity was guided by a clinical reasoning tool (Kenyon, 2012).

During the initial interview the Canadian Occupational Performance Measure (COPM) was administered to learn more about the participant's prioritized areas of occupation, obstacles they encounter, and a scale measure of their satisfaction in participating in each area of occupation, found in appendix B (Law, M, et al., 2019). Based on the results of the COPM, relevant subtests of The Participation Survey of Mobility Limited People (PARTS/M) were then administered to more specifically identify the best course of intervention for the participant found in Appendix D (Grey, D., 2006). Based on the increased prevalence of depression, anxiety, and loneliness for individuals with Cerebral Palsy found in the literature review, the General Anxiety Disorder 7-Item (GAD-7) screening found in Appendix E (Spitzer, R. et al., 1997). and the Center for Epidemiologic Studies Depression Scale (CES-D) found in Appendix F (Raadloff, L., 1977). were also administered. All information collected in these assessments in a password-protected university cloud storage service.

COPM

The COPM is a client-centered, semi-structured outcome measure for individuals to identify and prioritize occupational performance issues that restrict their participation in everyday living (Law et al., 1990). The COPM addresses areas of performance in some areas of life including self-care, leisure, and productivity, and can be used with clients of all ages (Law et al., 2019). Prioritization of performance issues is done through numeric scales including: importance to client, current perceived performance of skill, and current satisfaction with one's performance (Law et al., 2019). Furthermore the COPM facilitates goal setting and detects changes in a client's self-perception of participation over time, making it ideal to use as an initial assessment and as a reassessment at the end of therapy to measure progress (Law et al., 1990). Results of the COPM are consistently reliable (Cup et al., 2003; Kjeken et al., 2005; Tuntland et al., 2016). The COPM has shown internal consistency reliability as well as test-retest reliability across several different studies with ranges of diagnosis and populations (Cup et al., 2003; Kjeken et al., 2005; Tuntland et al., 2016). The COPM was also proven to be valid in studies with elderly individuals (Cup et al., 2003; McNulty & Beplat, 2008; Stuber & Nelson, 2010; Tuntland et al., 2016). The COPM's utility, reliability, and validity span a wide variety of clinical applications, demographics, languages and cultures, helping it to identify clinically significant changes.

PARTS/M

The Participation Survey of Mobility Limited People or PARTS/M is composed of two measures, participation and environmental barriers and facilitators to participation, and includes 135 items to answer. It is a self-report instrument used to assess participation in major life activities among people with mobility impairments and limitations, ages ranging from 13-64 years. The PARTS/M has been used to assess people with diagnoses and conditions of Cerebral Palsy, multiple sclerosis, spinal cord injury, and stroke recovery in a study completed to assess individuals with mobility impairments and limitations (Gray, et al., 2006). The key sub domains that the PARTS/M assessment focuses on are self care, mobility, domestic life, interpersonal, major life areas, and community, social, and civic life. Each of the sub domains are evaluated based on 4-participation components which are *temporal* including the time taken and frequency of the activity, *evaluative* meaning the importance, choice, and satisfaction of the activity, *health-related* activities include bowel and bladder circumstances, and supportive which is based on the environmental and human support systems in place (Shirley Ryan, 2013). Within this case report, the PARTS/M assessment was used as a tool to gather information about the client in order to implement interventions based on their desired needs. There are six key item sub domains that are included in the assessment: (1) Self-care including dressing, bathing, bladder care, bowel care, and meals; (2) Mobility including moving within the home, leaving home and vacations; (3) Domestic life including working inside the home and exterior maintenance; (4) Interpersonal including parenting, intimacy; (5) Major life areas including employment, volunteering, and money management; (6) Community, social, and civic life including community and religious acts. Each activity is evaluated on four participation components which are temporal, meaning the frequency and time taken, evaluative, health related, and supportive. It takes 20-90 minutes to administer the PARTS/M assessment depending on if the client is using the web version or hard copy version.

The PARTS/M has been shown to be reliable in some aspects of participation in major life activities for people with mobility impairments and limitations in community settings (Gray et al., 2006). The author and a licensed occupational therapist read each question aloud and provided physical assistance filling out the PARTS/M survey when it was requested. It is unknown to the authors if verbal administration affects the psychometric properties of the PARTS/M.

The results of the COPM and PARTS/M were discussed with the participant. Goals for intervention were then set with the client at the end of the initial interview after administering both the COPM and PARTS/M subtests. Interventions and client goals were created by the authors and the participant to facilitate collaboration in the therapeutic process.

GAD-7

The GAD-7 is a seven-item scale based on the Diagnostic and Statistical Manual of Mental Disorders - IV (DSM-IV) definition of general anxiety disorder (GAD) (Sapra et al., 2020). The GAD-7 investigates how bothered an individual was by seven different symptoms of anxiety over the past two weeks (Sapra et al., 2020). Each question on the GAD-7 is rated on a scale that ranges from zero to three with zero being “not at all” and three being “nearly daily” (Sapra et al., 2020). The GAD-7 was chosen for this case report due to its simple, brief and encompassing nature. Johnson et al. (2019) demonstrate the convergent and discriminant validity of the GAD-7 along with reliability.

CES-D

The CES-D is a 20-item self report scale designed to measure levels of depressive symptoms in members of the general population (Vilagut et al., 2016). The CES-D is made up of 20 questions about depressive symptoms that occurred the week prior to the interview (Vilagut et al., 2016). Each question on the CES-D is rated on a scale of zero to three with zero being “rarely or none of the time" (less than 1 day), and three being “most of all of the time" (5-7 days) (Vilagut et al., 2016). The CES-D was chosen because of its short nature and easy literacy. The CES-D also has convergent and discriminant validity along with sensitivity making it a great way to assess depressive symptom severity, if there are symptoms (Björgvinsson et al., 2013).

Results from the GAD-7 and CES-D were used to gain better baseline knowledge of the participant’s mental health. Results of the GAD-7 and CES-D indicated that counseling may be warranted. The participant indicated she was already established with a mental health therapist and was working on interventions to reduce anxiety.

Intervention

The American Occupational Therapy Association emphasizes the need to acknowledge the personal agency of the client living with chronic illness when identifying therapeutic outcomes as self-efficacy of such individuals (AOTA, 2022). Thus, goals were formed based on the participant's stated preferences and results on the COPM and PARTS/M. Goals were also informed by the limitations of the procured timeline, projected frequency of sessions based on author and participant availability, available resources, and therapeutic skill sets of the authors. Once approved by the participant, goals directly informed the authors' design of the intervention plan.

Intervention sessions were carried out by the authors, who at the time were entry-level master's occupational therapy students, under the supervision of a licensed occupational therapist/faculty member in the students' program. Seven sessions occurred, lasting 1.5 hours each. Intervention strategies included establishment and maintenance of a bedtime routine, education on pain management techniques, education on anxiety coping strategies, and practicing adaptive cooking strategies. Much of the session time was also occupied by collaborative identification of the barriers to occupational participation, thereby informing necessary strategies and adaptive equipment to employ in subsequent sessions. Such barriers included inability to toilet independently and limited access to the kitchen space in the participant's home. Interventions took place in the participant's home for the majority of sessions, and once at a local college in the community which the participant expressed interest in attending. A list of adaptive equipment was compiled and purchased using grant money.

The initial goals were modified after the first few treatment sessions as it was determined that the parameters of the intervention period were not supportive of progress toward the goal of the participant transferring to the toilet independently. Thus, the goal was rewritten to involve use of adaptive equipment that would enable the participant to urinate in a public toilet without needing a caregiver to assist, as this would allow her to enjoy public spaces independently for durations necessary for participation in occupations (i.e. a half-day of in-person classes, an internship shift, etc.).

The AOTA (2022) also emphasizes the importance of providing the client with chronic illness with education in condition-specific health management activities, including identifying resources for support and encouraging self-advocacy. For instance, the participant stated that she frequently would forgo drinking water during the day before her five-hour shifts with her internship because she was unsure if assistance in toilet transfers could be provided by the organization. She also stated that she would not perform regular tilts in her power chair to prevent pressure ulcers during these shifts due to feeling different from her able-bodied peers, and reported acquiring recently for the first time in her life. Thus the authors provided education about the importance of hydration and performing tilts, and promoted her self-advocacy in requesting support from her organization to attain assistance in toileting at least once per shift.

Data Assessment

After 7 treatment sessions, the authors tried to re-evaluate the participant using the COPM, PARTS/M, GAD-7, and CES-D. The authors planned to ask the participant to re-rate her performance and satisfaction on the occupational performance issues that were identified during administration of the COPM at the initial interview. However, the participant stopped communication with the authors prior to the final session. Had the authors been given the opportunity, outcomes in the participant's performance and satisfaction in chosen occupations would have been evaluated for clinically significant changes. A minimum change of two points on the performance and satisfaction scales in the COPM is considered a clinically significant change (COPM, 2023). To determine change in satisfaction, scores from the initial assessment would have been subtracted from satisfaction scores on the reassessment (T2-T1), and performance change would have been calculated the same way. The information gathered in the case report would have been used to answer the clinical questions posed at the beginning of this report.

Results

The participant was a 20-year-old female with a self-reported past medical history of Cerebral Palsy, anxiety, and pain. The participant presented as a powered wheelchair user. The participant displayed high muscle tone on the left side of her body. The participant also displayed left elbow flexion, left upper extremity adduction, and internal rotation of the shoulder due to her high tone. During the time of assessment and intervention, the participant self-reported that she was not being followed by any other rehabilitation specialties, however, she was being seen by a mental health professional for psychotherapy. No medical records were accessed to confirm diagnoses or current providers. Assessment of the participant took place in May 2023.

Five occupational performance issues were identified based on the results of the COPM (Figure 1), including those revolving around employment interests and pursuits; meal preparation and cleanup; social (peer group participation); formal education participation; social and emotional health promotion and maintenance related to anxiety management.

The GAD-7 was administered and the client scored a total of 7, indicating mild anxiety (Figure 2). Client indicated that anxiety symptoms make life “somewhat difficult,” and that she feels nervous, anxious, or on edge nearly every day.

The CES-D was administered and the client scored a total of 4/60, indicating a low level of depression symptomatology. Notable client responses in the questionnaire included feeling lonely some of the time (1-2 days in the last week), as well as feeling fearful a moderate amount of time (3-4 days in the last week).

Goals for the participant were established by the authors after interpretation of the results of the formal evaluation (Figure 4). Once goals were established and discussed with the participant, interventions took place from May to September of 2023. At the beginning of each session, the participant was asked to rate her anxiety and pain levels using a 1-10 interval scale, 10 being extremely bad anxiety or pain, and 0 being no anxiety or pain. The participant was also asked to rate her anxiety and pain at the end of each session. There was an initial decrease of Pre and Post session pain and anxiety levels after session one. Anxiety levels remained low after the first session, however, pain levels steadily increased, returning to their initial rating by the fifth session (Figure 5.) Each intervention session focused on one or two of the five goals established for the client (Figure 6.)

Discussion:

Though the results of this case report are not generalizable due to the sample size of one, they can provide suggestions about therapeutic techniques, evaluations, and processes that could be used in treating an individual similar to the participant in this case study. The main finding of this study was that, while the participant had goals of peer group participation and formal education participation, occupational performance issues with more basic needs such as toileting had to be prioritized in order to work toward those goals. Maslow's hierarchy of needs describes this phenomenon and shows that lower level needs must be met before an individual can continue on to more complex tasks and higher functioning.

Not only do physical challenges limit basic self-care, and in turn, socialization for our participant, but interviews with her revealed systemic barriers to occupational performance. It was found that her individualized education program (IEP) from high school still determines much of the available aid and accommodation in community college. She shared that she would prefer to be evaluated on an individual level for assistance rather than in this way. Further, our participant and her mother explained that local resources for those with disabilities including the Community Living Support (CLS) and Michigan Rehabilitation Services (MRS) were not viable sources of ongoing support for her goals of socialization. Limited funding through community resources such as these and limited coverage by the family's commercial insurance also inhibit ongoing occupational and physical therapy. And while the Affordable Care Act includes habilitative therapy under its definition of medical necessity, to attain such services requires physician referral (Stover, 2016). We believe our participant and her family, although aware of what occupational therapy may do for her independence, have not benefited from the full scope of what ongoing occupational therapy can offer. Pain, fatigue, mental health challenges and limited social participation remain prominent challenges not entirely addressed to date (Hanes et al., 2019). For instance, the American Occupational Therapy Association's guidelines for treating individuals with chronic illness emphasizes caregiver education, as well as environmental modification to improve accessibility (2022). It was noted that our participant's parents had recently remodeled their kitchen with seemingly limited consideration of its accessibility for their daughter's use. This observed disconnect between the occupational therapy scope and the services received by this individual may indicate a gap in the medical model and a need for advocacy for habilitative services for adults with Cerebral Palsy among payors as well as among primary care physicians.

Mental health may be connected to occupational performance in young adults with Cerebral Palsy with non-cognitive disabilities. Such individuals may experience greater anxiety and depression related to their barriers in occupational performance, and rippling effects of those barriers. For instance, our participant expressed a desire to participate in her community, but also expressed feelings of anxiety whenever doing so due to her vulnerabilities including the need for assistance in toileting. Such fears caused her to seek unhealthy coping strategies such as reducing her water intake before and during her shifts and neglecting to perform weight-shifts. The expressed mental health challenges of our participant are consistent with findings that mental health disorders may be more pronounced in those with neurodevelopmental disabilities (Whitney et al., 2019). Likewise, developing social networks with peers was one of our participant's priorities, although she has felt lonely as many with Cerebral Palsy have reported (Balandin et al., 2006).Link it to the literature review.

Conclusion

This case report addresses barriers to participation in occupations that a young adult with Cerebral Palsy, limited physical mobility, and intact cognition experiences. While the results can not be generalized, rehabilitation professionals may find components of this case report applicable to other young adult clients with physical disabilities and intact cognition. Occupational therapists will typically use a framework based on client-centered practice and integrate interventions based on models. This case report describes individualized goals, interventions, and outcome measures through the occupational therapy scope of practice. This case report provides preliminary data supporting occupational therapy intervention with individuals with physical impairments but intact cognition. Furthermore, this case report presents information that would benefit this population specifically relating to mental health issues.

The variable results allowed the authors to see the roles family support and client advocacy play in therapeutic outcomes. Throughout the case-report, the authors recognized the importance of caregivers being mindful of the decisions they are making on behalf of their loved one, why they are making those decisions, and the potential impact those decisions may be having on the one they are taking care of, so that they do not inadvertently create barriers to their loved one's success. Additionally, community services and social support for the participant were lacking, and the need for societal awareness of this lack of resources is needed to make the change.

Implications for Occupational Therapy Practice

According to Whitney et al. (2019), adults with Cerebral Palsy experience mental health disorders at a greater rate in comparison to typically-developed peers. While not generalizable, our findings lead us to believe this discrepancy may be correlated with discrepancies in ability to participate in meaningful activities between these groups; specifically in social engagement with peers, formal education participation, and employment interests and pursuits. Furthermore, our findings may suggest that individuals with Cerebral Palsy in young adulthood benefit from skilled occupational therapy intervention to improve satisfaction with participation in daily activities. Continued research on the effects of occupational therapy practice on mental health and overall satisfaction with life for individuals with Cerebral Palsy in young adulthood is needed.

Conclusions

Young adults with Cerebral Palsy and other physical disabilities with intact cognition face barriers to participation in meaningful activities common to this age and stage of development. Unlike their peers with cognitive disabilities, this population may face greater gaps in assistance otherwise available from commercial insurance and community programs needed to attend a college campus, use public transportation, socialize, and participate in the community.

Our case report suggests that our participant shows great potential for increased participation in these meaningful activities given adequate resources and ongoing rehabilitation services.

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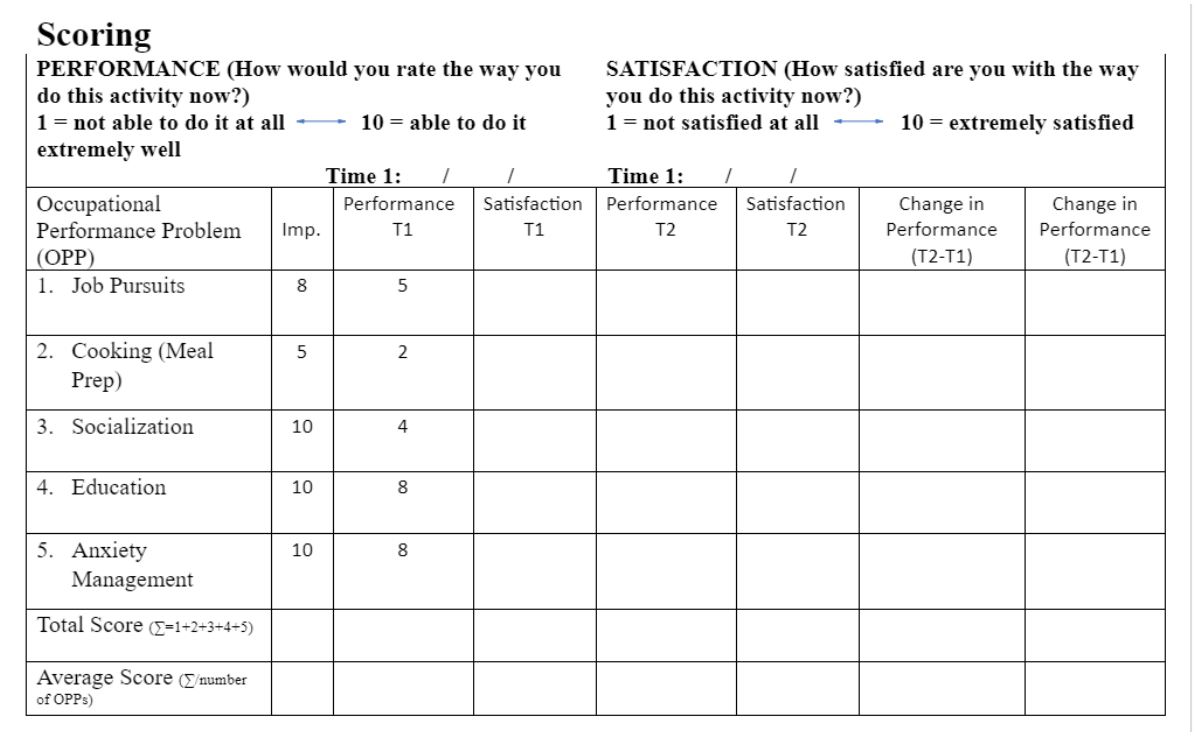
Figure 1

Results of the COPM



Scoring

PERFORMANCE (How would you rate the way you do this activity now?)
1 = not able to do it at all ⟷ 10 = able to do it extremely well

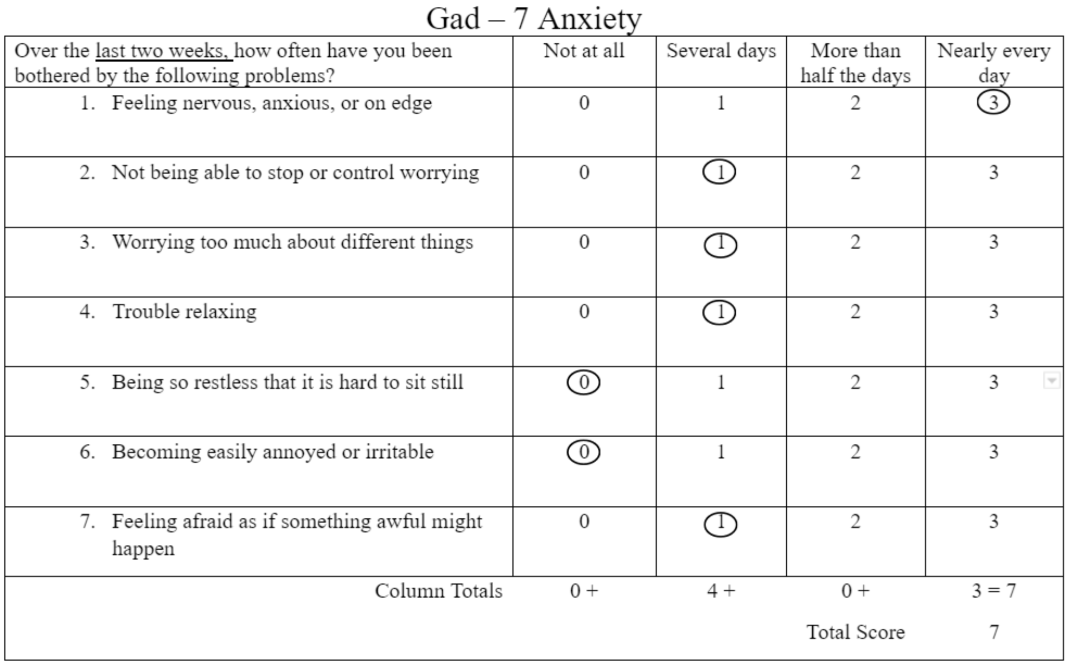
SATISFACTION (How satisfied are you with the way you do this activity now?)
1 = not satisfied at all ⟷ 10 = extremely satisfied

Time 1: / / **Time 1: / /**

Occupational Performance Problem (OPP)	Imp.	Performance T1	Satisfaction T1	Performance T2	Satisfaction T2	Change in Performance (T2-T1)	Change in Performance (T2-T1)
1. Job Pursuits	8	5					
2. Cooking (Meal Prep)	5	2					
3. Socialization	10	4					
4. Education	10	8					
5. Anxiety Management	10	8					
Total Score (∑=1+2+3+4+5)							
Average Score (∑/number of OPPs)							

Figure 2

Results of the GAD-7 Screening for Anxiety

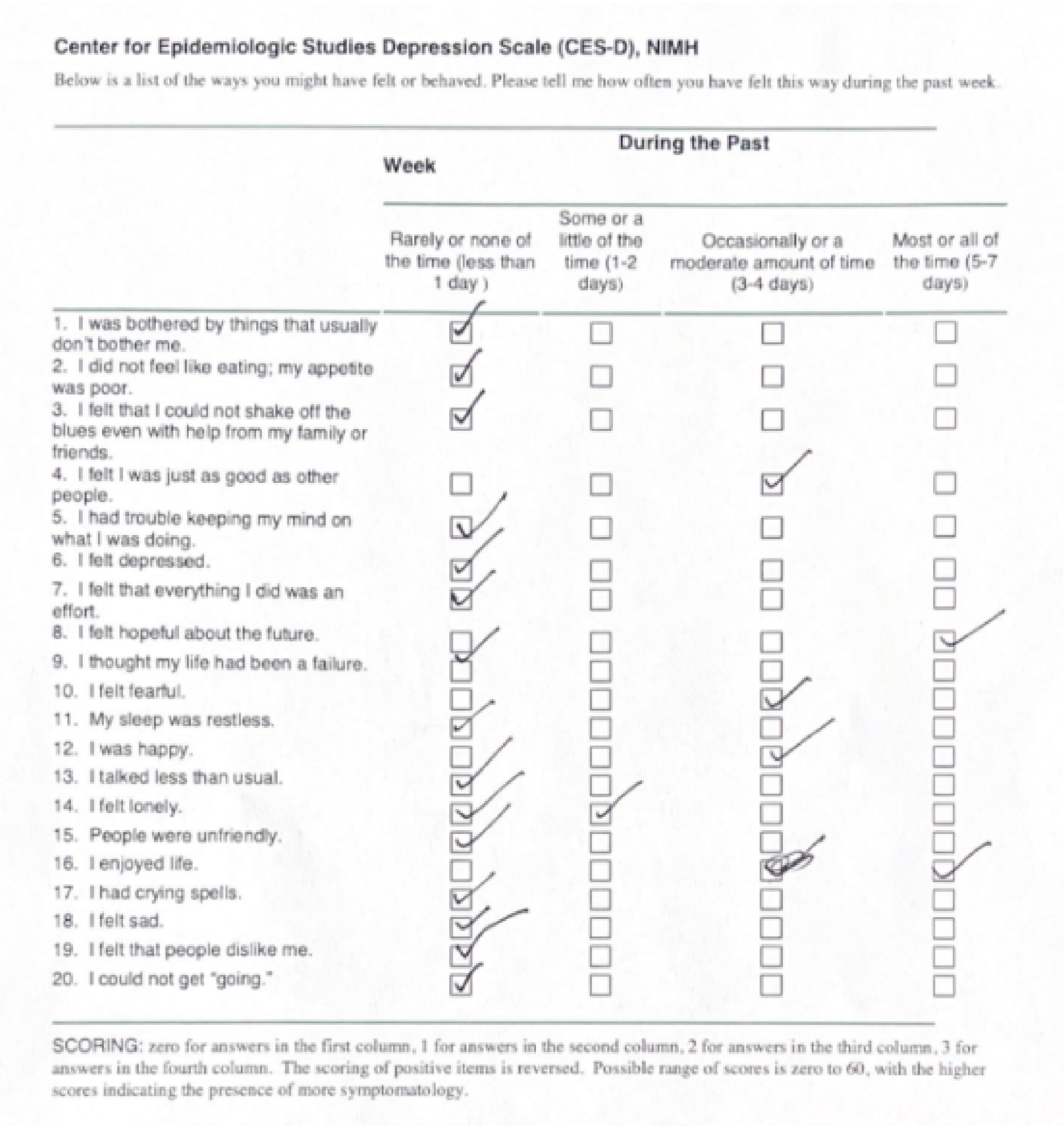


Gad – 7 Anxiety

Over the last two weeks, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	0	1	2	[✓ 3]
2. Not being able to stop or control worrying	0	[✓ 1]	2	3
3. Worrying too much about different things	0	[✓ 1]	2	3
4. Trouble relaxing	0	[✓ 1]	2	3
5. Being so restless that it is hard to sit still	[✓ 0]	1	2	3
6. Becoming easily annoyed or irritable	[✓ 0]	1	2	3
7. Feeling afraid as if something awful might happen	0	[✓ 1]	2	3
Column Totals	0 +	4 +	0 +	3 = 7
			Total Score	7

Figure 3

Results of the CES-D Screening for Depression



Center for Epidemiologic Studies Depression Scale (CES-D), NIMH

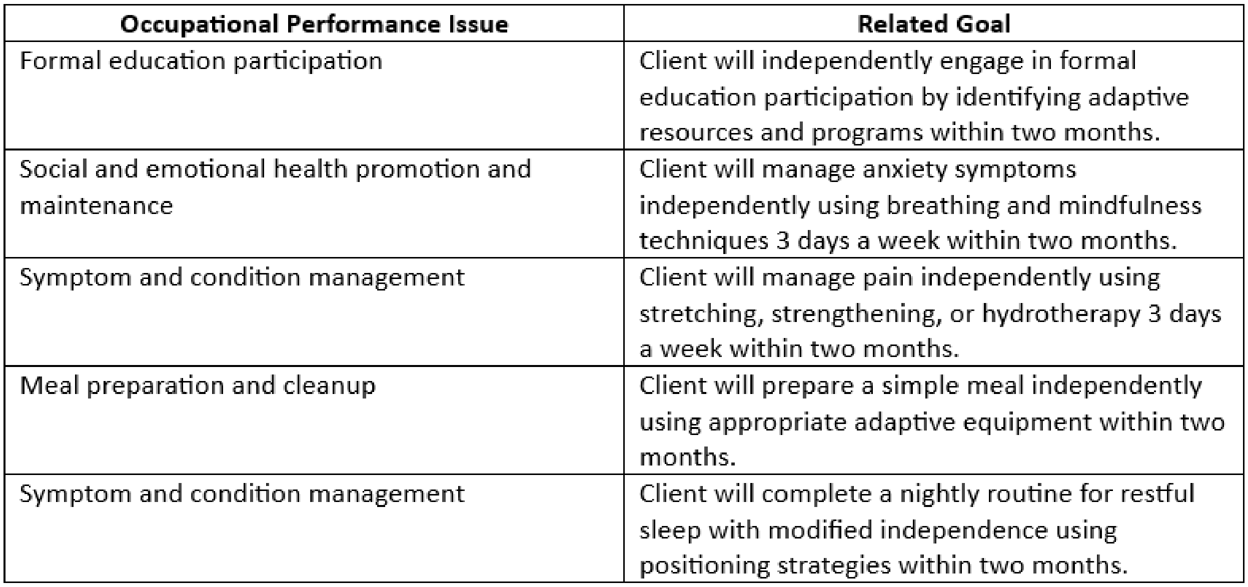
Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

	During the Past Week			
	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	☑	☐	☐	☐
2. I did not feel like eating; my appetite was poor.	☑	☐	☐	☐
3. I felt that I could not shake off the blues even with help from my family or friends.	☑	☐	☐	☐
4. I felt I was just as good as other people.	☐	☐	☑	☐
5. I had trouble keeping my mind on what I was doing.	☑	☐	☐	☐
6. I felt depressed.	☑	☐	☐	☐
7. I felt that everything I did was an effort.	☑	☐	☐	☐
8. I felt hopeful about the future.	☐	☐	☐	☑
9. I thought my life had been a failure.	☑	☐	☐	☐
10. I felt fearful.	☐	☐	☑	☐
11. My sleep was restless.	☑	☐	☐	☐
12. I was happy.	☐	☐	☑	☐
13. I talked less than usual.	☑	☐	☐	☐
14. I felt lonely.	☑	☑	☐	☐
15. People were unfriendly.	☑	☐	☐	☐
16. I enjoyed life.	☐	☐	☒	☑
17. I had crying spells.	☑	☐	☐	☐
18. I felt sad.	☑	☐	☐	☐
19. I felt that people dislike me.	☑	☐	☐	☐
20. I could not get "going."	☑	☐	☐	☐

SCORING: zero for answers in the first column, 1 for answers in the second column, 2 for answers in the third column, 3 for answers in the fourth column. The scoring of positive items is reversed. Possible range of scores is zero to 60, with the higher scores indicating the presence of more symptomatology.

Figure 4

Goals Set With the Participant Based on Our Evaluation



Occupational Performance Issue	**Related Goal**
Formal education participation	Client will independently engage in formal education participation by identifying adaptive resources and programs within two months.
Social and emotional health promotion and maintenance	Client will manage anxiety symptoms independently using breathing and mindfulness techniques 3 days a week within two months.
Symptom and condition management	Client will manage pain independently using stretching, strengthening, or hydrotherapy 3 days a week within two months.
Meal preparation and cleanup	Client will prepare a simple meal independently using appropriate adaptive equipment within two months.
Symptom and condition management	Client will complete a nightly routine for restful sleep with modified independence using positioning strategies within two months.

Figure 5

Pain and Anxiety Levels

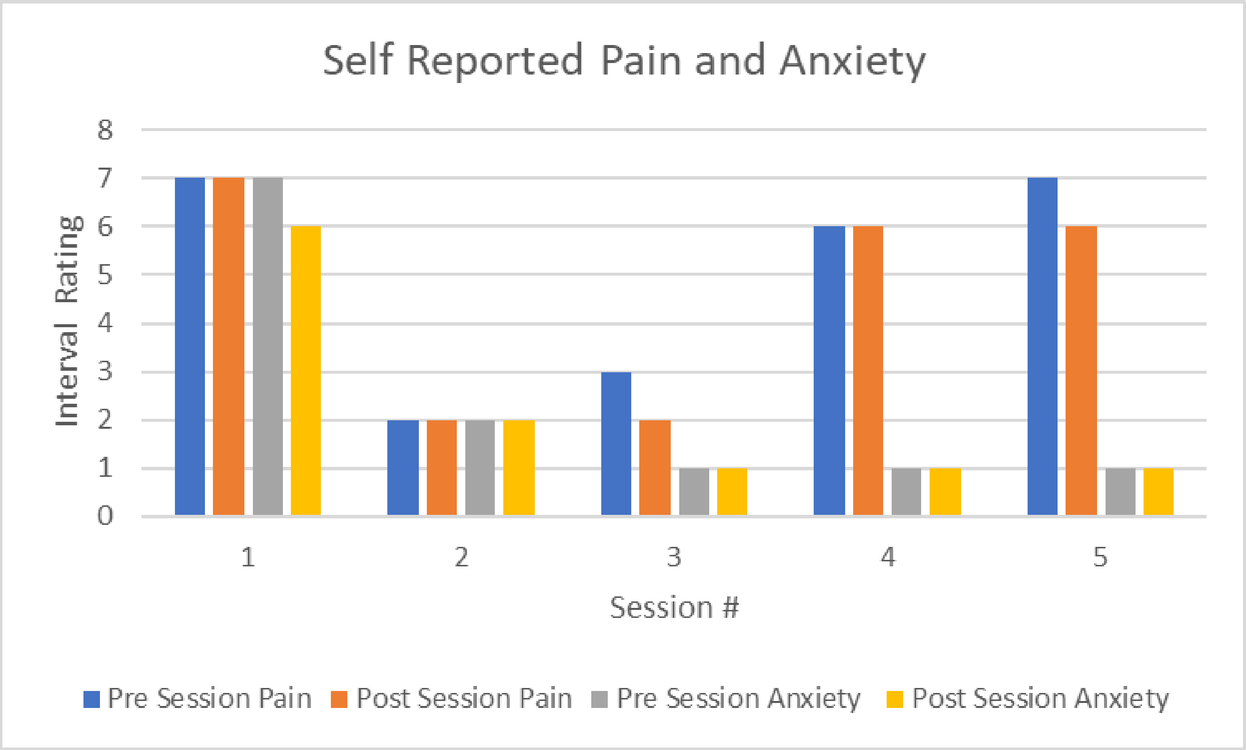
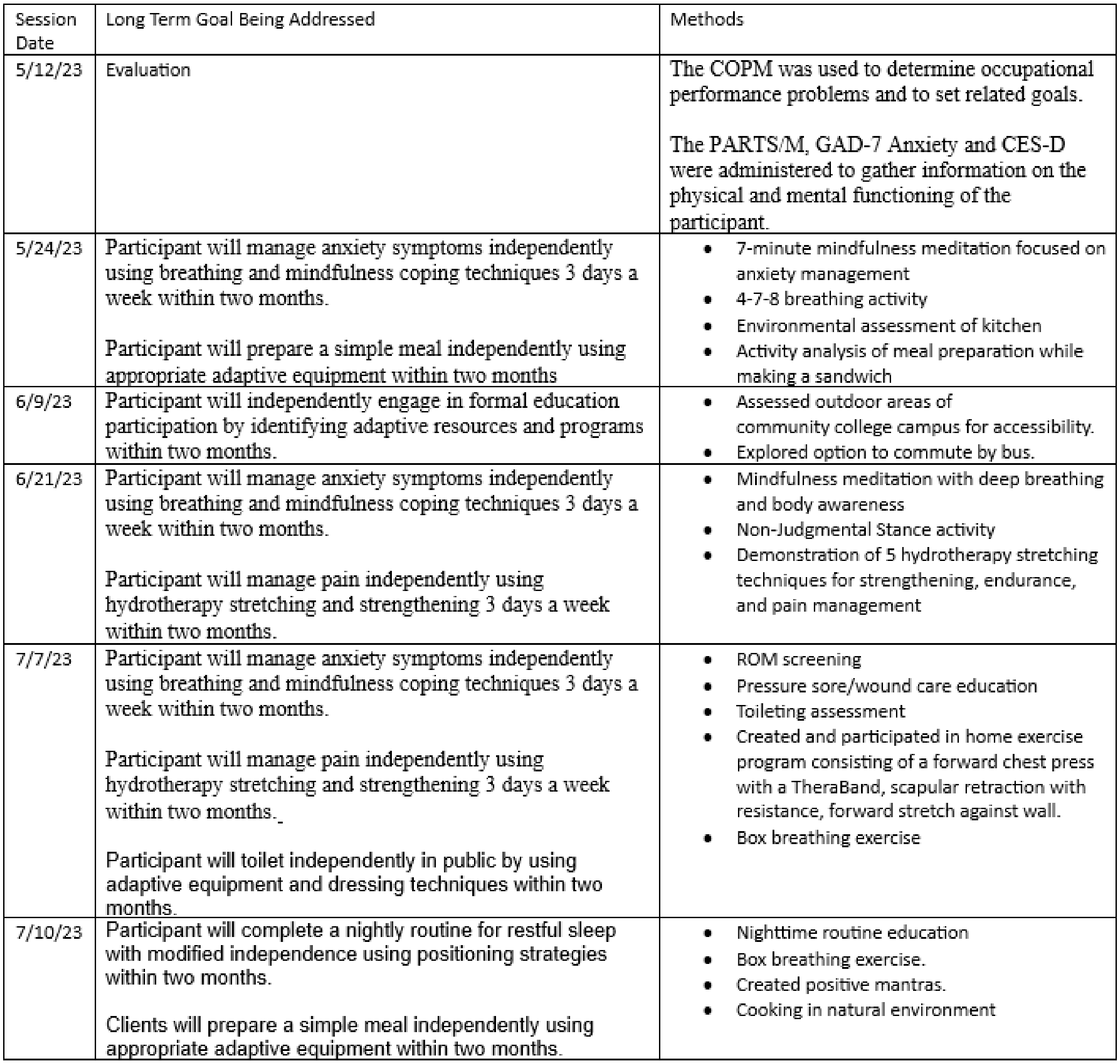


Figure 6

Treatment Session Summary



Session Date	Long Term Goal Being Addressed	Methods
5/12/23	Evaluation	The COPM was used to determine occupational performance problems and to set related goals. The PARTS/M, GAD-7 Anxiety and CES-D were administered to gather information on the physical and mental functioning of the participant.
5/24/23	Participant will manage anxiety symptoms independently using breathing and mindfulness coping techniques 3 days a week within two months. Participant will prepare a simple meal independently using appropriate adaptive equipment within two months	• 7-minute mindfulness meditation focused on anxiety management • 4-7-8 breathing activity • Environmental assessment of kitchen • Activity analysis of meal preparation while making a sandwich
6/9/23	Participant will independently engage in formal education participation by identifying adaptive resources and programs within two months.	• Assessed outdoor areas of community college campus for accessibility. • Explored option to commute by bus.
6/21/23	Participant will manage anxiety symptoms independently using breathing and mindfulness coping techniques 3 days a week within two months. Participant will manage pain independently using hydrotherapy stretching and strengthening 3 days a week within two months.	• Mindfulness meditation with deep breathing and body awareness • Non-Judgmental Stance activity • Demonstration of 5 hydrotherapy stretching techniques for strengthening, endurance, and pain management
7/7/23	Participant will manage anxiety symptoms independently using breathing and mindfulness coping techniques 3 days a week within two months. Participant will manage pain independently using hydrotherapy stretching and strengthening 3 days a week within two months._ Participant will toilet independently in public by using adaptive equipment and dressing techniques within two months.	• ROM screening • Pressure sore/wound care education • Toileting assessment • Created and participated in home exercise program consisting of a forward chest press with a TheraBand, scapular retraction with resistance, forward stretch against wall. • Box breathing exercise
7/10/23	Participant will complete a nightly routine for restful sleep with modified independence using positioning strategies within two months. Clients will prepare a simple meal independently using appropriate adaptive equipment within two months.	• Nighttime routine education • Box breathing exercise. • Created positive mantras. • Cooking in natural environment

Appendix A

Recruitment Email

Dear ________,

You are invited to participate in a case study project that addresses social participation for physically disabled young adults without intellectual disabilities. The goal of this project is to create possible occupational therapy interventions for physically disabled young adults without intellectual disabilities regarding social participation. Additionally, we hope to add to the limited literature involving young adults with physical disabilities.

To participate in the case study you must meet the following criteria:

- Age 18 or older
- identifies as having a physical disability
- no cognitive impairment
- motivation to seek out social participation and formal education participation interventions.

Information about the project and the consent form precedes data collection and interventions. Please, take a moment to read the information carefully. If you are interested in participating, kindly respond with your intent to the email below.

You may contact the faculty member from the contact information below regarding any information that you may not understand before deciding to participate. Thank you for your time and consideration.

Sincerely,

Kelly Machnik, OTD, OTRL

Assistant Professor, Grand Valley State University

Occupational Science & Therapy Department

500 LaFayette Ave., RFH 204

1-616-331-5532

machnikk@gvsu.edu

Appendix B

Verbal Consent for Participant

Hello, my name is Dr. Kelly Machnik. I am a professor in the Occupational Science and Therapy department at Grand Valley State University conducting a case report addressing social participation for physically disabled young adults without intellectual disabilities. The goal of this project is to create possible occupational therapy interventions for physically disabled young adults without intellectual disabilities regarding social participation. Your participation is completely voluntary. This means that you do not have to participate in this case report unless you want to. The purpose of this case report is to investigate what supports exist to help increase access to social participation opportunities for physically disabled young adults without intellectual disabilities, as well as define occupational therapy's role in increasing access to social participation opportunities for physically disabled young adults without intellectual disabilities, and discover how current supports that increase access to social participation opportunities for physically disabled young adults without intellectual disabilities can be improved to better support those living with Cerebral Palsy.

The authors expect that there will only be one participant in this project . As part of the case report, you will be asked to participate in a semi structured interview administered by the authors of this case report. Questions in the semi structured interview will revolve around your daily routines, social participation, and leisure activities. Additionally you will be asked to participate in depression and anxiety screenings administered by the authors of this case report. There is a possibility that some of the questions may make you uncomfortable or distressed; if so, please let the authors know. You don't have to answer those questions if you don't want to.

You will also be asked to participate in 3-4 social participation related occupational therapy interventions based on information gathered from the semi-formal interview.

You also need to understand that all information that we receive from you by email, zoom meetings, or interviews, including your name and any other identifying information, will be strictly confidential. The authors will not identify you or use any information that would make it possible for anyone to identify you in any presentation or written reports about this case report. If it is okay with you, the authors might want to use direct quotes from you, but these would only be cited as from a person.

There is no expected risk to you for participating in this case report. There could be benefits to you including the addition of supports and services which help increase your occupational performance in social participation. You will be told of any significant new findings developed that may influence your willingness to continue to participate in the project.

To do this project, health information that identifies you may need to be collected. The authors may collect the results of assessments, questionnaires and interviews. The authors may also collect information from your medical record. We will only collect information that is needed for the project. For you to be in this project, your permission will be needed to collect and share this information. Your health information will be shared with people involved with this case report at Grand Valley State University.

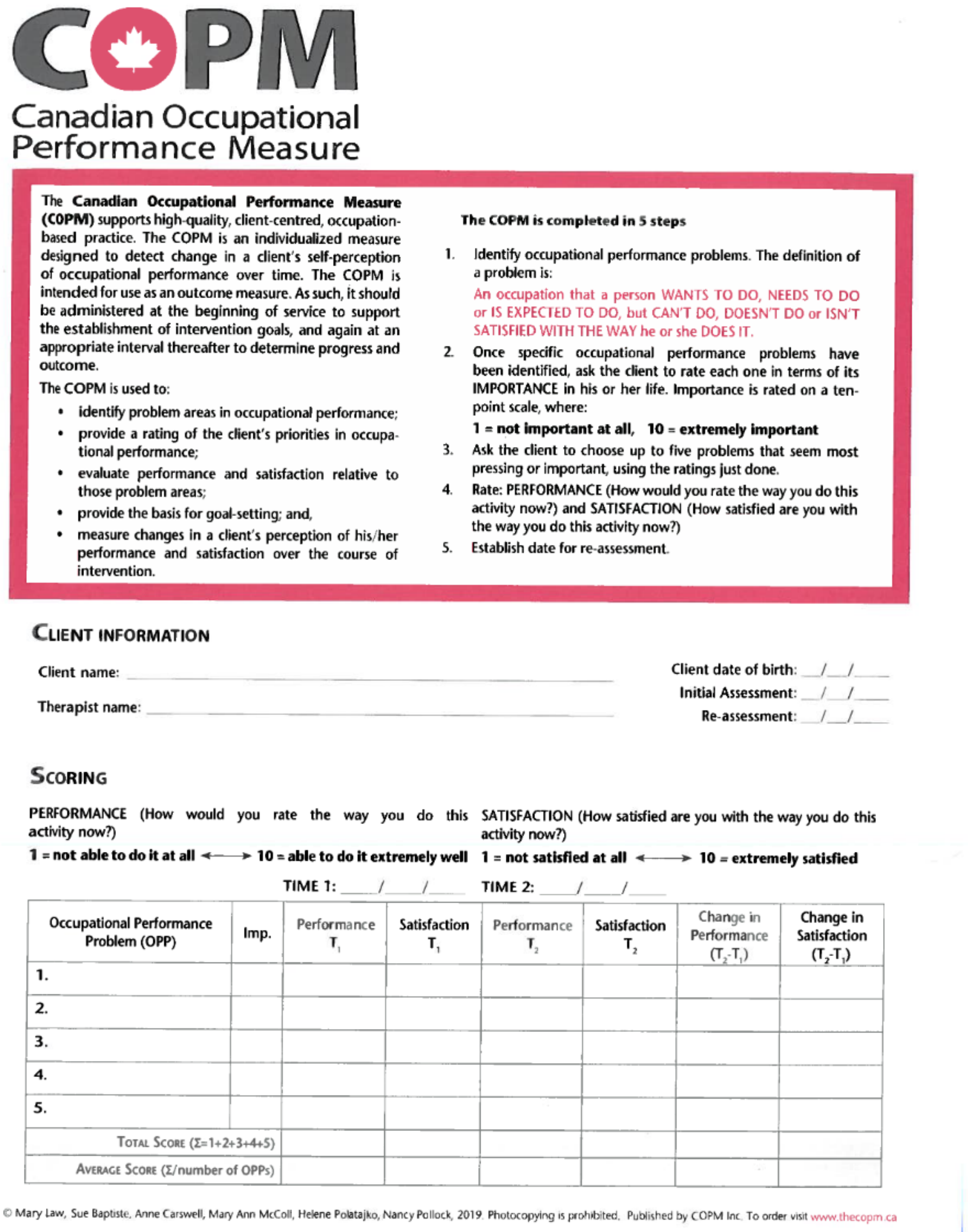
It is important to know that you can change your mind and stop participating at any time without penalty. If you change your mind later and do not want to participate or you don't want the authors to collect or share your health information, you can send an email to the authors. The email needs to say that you have changed your mind and no longer wish to participate.

Do you have any questions? Do you give permission to participate in the case report given the information stated above?

You can call myself, Kelly Machnik, at (1-616-331-5532), or you can email me machnikk@gvsu.edu with questions about the case report.

Appendix C

COPM Assessment



COPM

Canadian Occupational Performance Measure

The **Canadian Occupational Performance Measure (COPM)** supports high-quality, client-centred, occupation-based practice. The COPM is an individualized measure designed to detect change in a client's self-perception of occupational performance over time. The COPM is intended for use as an outcome measure. As such, it should be administered at the beginning of service to support the establishment of intervention goals, and again at an appropriate interval thereafter to determine progress and outcome.

The COPM is used to:

- identify problem areas in occupational performance;
- provide a rating of the client's priorities in occupational performance;
- evaluate performance and satisfaction relative to those problem areas;
- provide the basis for goal-setting; and,
- measure changes in a client's perception of his/her performance and satisfaction over the course of intervention.

The COPM is completed in 5 steps

1. Identify occupational performance problems. The definition of a problem is:
   An occupation that a person WANTS TO DO, NEEDS TO DO or IS EXPECTED TO DO, but CAN'T DO, DOESN'T DO or ISN'T SATISFIED WITH THE WAY he or she DOES IT.
2. Once specific occupational performance problems have been identified, ask the client to rate each one in terms of its IMPORTANCE in his or her life. Importance is rated on a ten-point scale, where:
   1 = not important at all, 10 = extremely important
3. Ask the client to choose up to five problems that seem most pressing or important, using the ratings just done.
4. Rate: PERFORMANCE (How would you rate the way you do this activity now?) and SATISFACTION (How satisfied are you with the way you do this activity now?)
5. Establish date for re-assessment.

CLIENT INFORMATION

Client name: ______________________________

Therapist name: ______________________________

Client date of birth: ___/___/____

Initial Assessment: ___/___/____

Re-assessment: ___/___/____

SCORING

PERFORMANCE (How would you rate the way you do this activity now?)

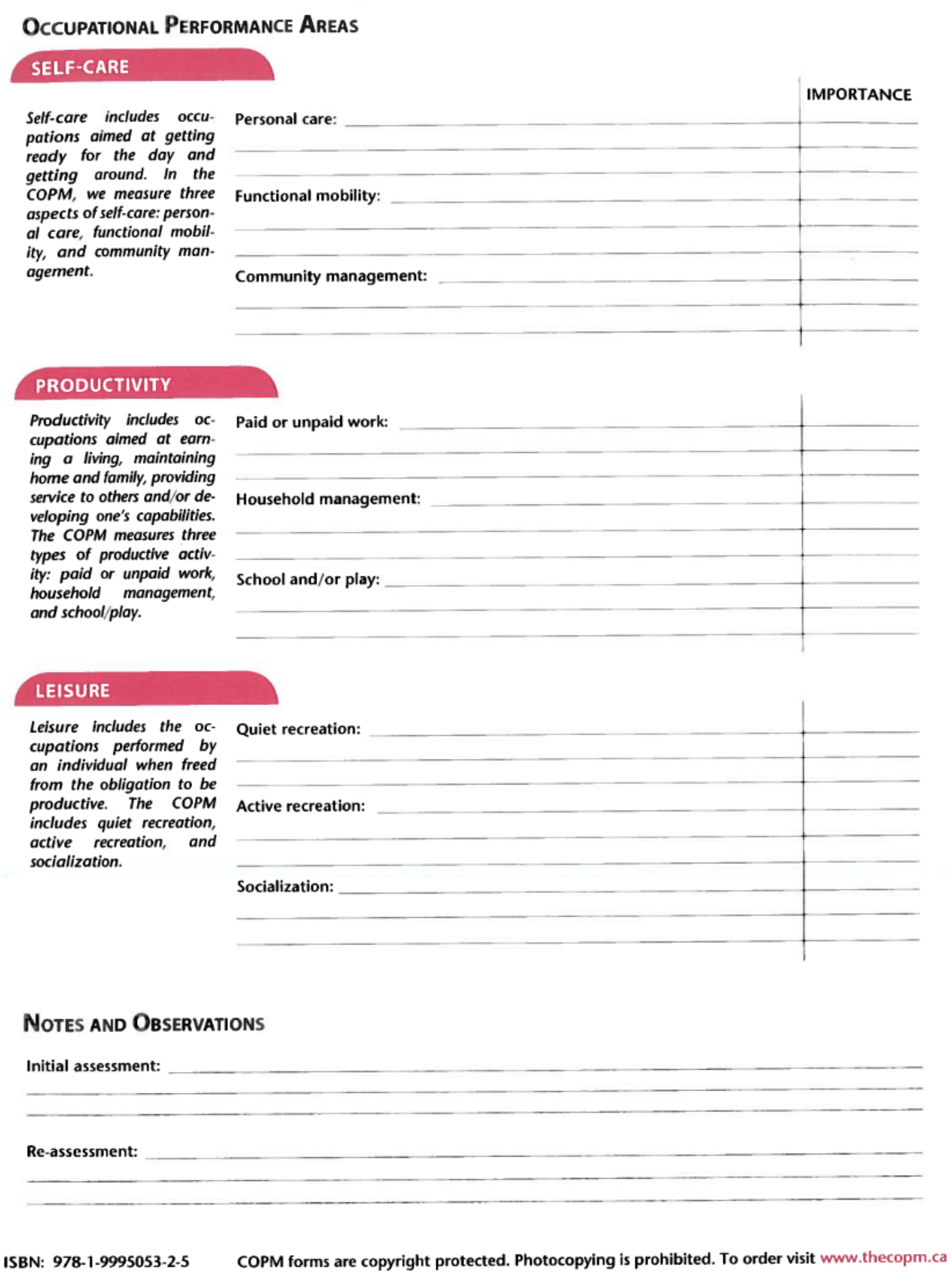
1 = not able to do it at all ←→ 10 = able to do it extremely well

SATISFACTION (How satisfied are you with the way you do this activity now?)

1 = not satisfied at all ←→ 10 = extremely satisfied

TIME 1: ____/____/____ TIME 2: ____/____/____

Occupational Performance Problem (OPP)	Imp.	Performance T_1	Satisfaction T_1	Performance T_2	Satisfaction T_2	Change in Performance $(T_2\text{-}T_1)$	Change in Satisfaction $(T_2\text{-}T_1)$
1.							
2.							
3.							
4.							
5.							
TOTAL SCORE (Σ=1+2+3+4+5)							
AVERAGE SCORE (Σ/number of OPPs)							



OCCUPATIONAL PERFORMANCE AREAS

SELF-CARE

IMPORTANCE

Self-care includes occupations aimed at getting ready for the day and getting around. In the COPM, we measure three aspects of self-care: personal care, functional mobility, and community management.

Personal care:

Functional mobility:

Community management:

PRODUCTIVITY

Productivity includes occupations aimed at earning a living, maintaining home and family, providing service to others and/or developing one's capabilities. The COPM measures three types of productive activity: paid or unpaid work, household management, and school/play.

Paid or unpaid work:

Household management:

School and/or play:

LEISURE

Leisure includes the occupations performed by an individual when freed from the obligation to be productive. The COPM includes quiet recreation, active recreation, and socialization.

Quiet recreation:

Active recreation:

Socialization:

NOTES AND OBSERVATIONS

Initial assessment:

Re-assessment:

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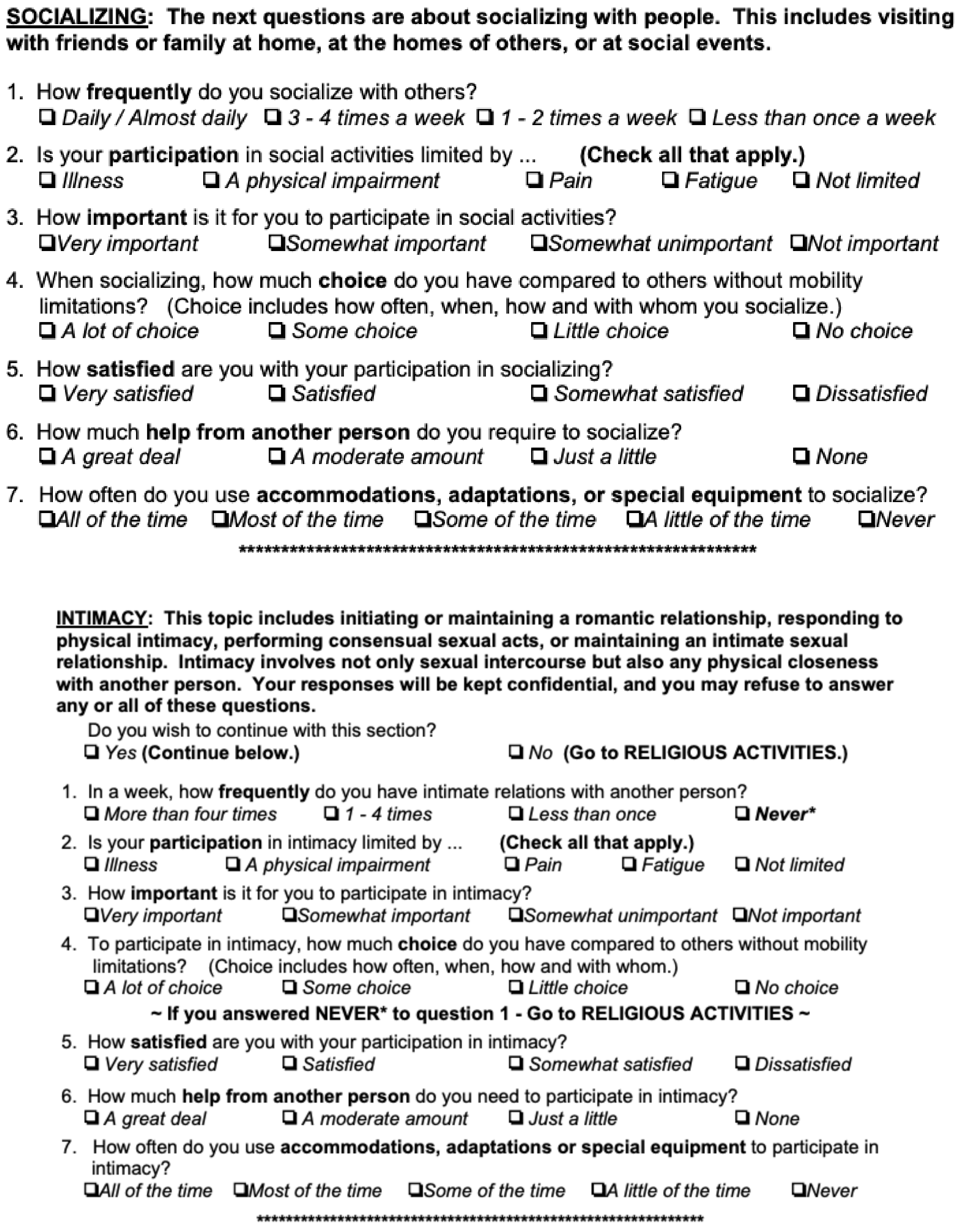
Appendix D

PARTS/M Assessment: Socialization Subsection



SOCIALIZING: The next questions are about socializing with people. This includes visiting with friends or family at home, at the homes of others, or at social events.

1. How **frequently** do you socialize with others?
   ☐ *Daily / Almost daily* ☐ *3 - 4 times a week* ☐ *1 - 2 times a week* ☐ *Less than once a week*
2. Is your **participation** in social activities limited by ... **(Check all that apply.)**
   ☐ *Illness* ☐ *A physical impairment* ☐ *Pain* ☐ *Fatigue* ☐ *Not limited*
3. How **important** is it for you to participate in social activities?
   ☐*Very important* ☐*Somewhat important* ☐*Somewhat unimportant* ☐*Not important*
4. When socializing, how much **choice** do you have compared to others without mobility limitations? (Choice includes how often, when, how and with whom you socialize.)
   ☐ *A lot of choice* ☐ *Some choice* ☐ *Little choice* ☐ *No choice*
5. How **satisfied** are you with your participation in socializing?
   ☐ *Very satisfied* ☐ *Satisfied* ☐ *Somewhat satisfied* ☐ *Dissatisfied*
6. How much **help from another person** do you require to socialize?
   ☐ *A great deal* ☐ *A moderate amount* ☐ *Just a little* ☐ *None*
7. How often do you use **accommodations, adaptations, or special equipment** to socialize?
   ☐*All of the time* ☐*Most of the time* ☐*Some of the time* ☐*A little of the time* ☐*Never*

****

INTIMACY: This topic includes initiating or maintaining a romantic relationship, responding to physical intimacy, performing consensual sexual acts, or maintaining an intimate sexual relationship. Intimacy involves not only sexual intercourse but also any physical closeness with another person. Your responses will be kept confidential, and you may refuse to answer any or all of these questions.

Do you wish to continue with this section?
☐ *Yes* **(Continue below.)** ☐ *No* **(Go to RELIGIOUS ACTIVITIES.)**

1. In a week, how **frequently** do you have intimate relations with another person?
   ☐ *More than four times* ☐ *1 - 4 times* ☐ *Less than once* ☐ ***Never****
2. Is your **participation** in intimacy limited by ... **(Check all that apply.)**
   ☐ *Illness* ☐ *A physical impairment* ☐ *Pain* ☐ *Fatigue* ☐ *Not limited*
3. How **important** is it for you to participate in intimacy?
   ☐*Very important* ☐*Somewhat important* ☐*Somewhat unimportant* ☐*Not important*
4. To participate in intimacy, how much **choice** do you have compared to others without mobility limitations? (Choice includes how often, when, how and with whom.)
   ☐ *A lot of choice* ☐ *Some choice* ☐ *Little choice* ☐ *No choice*

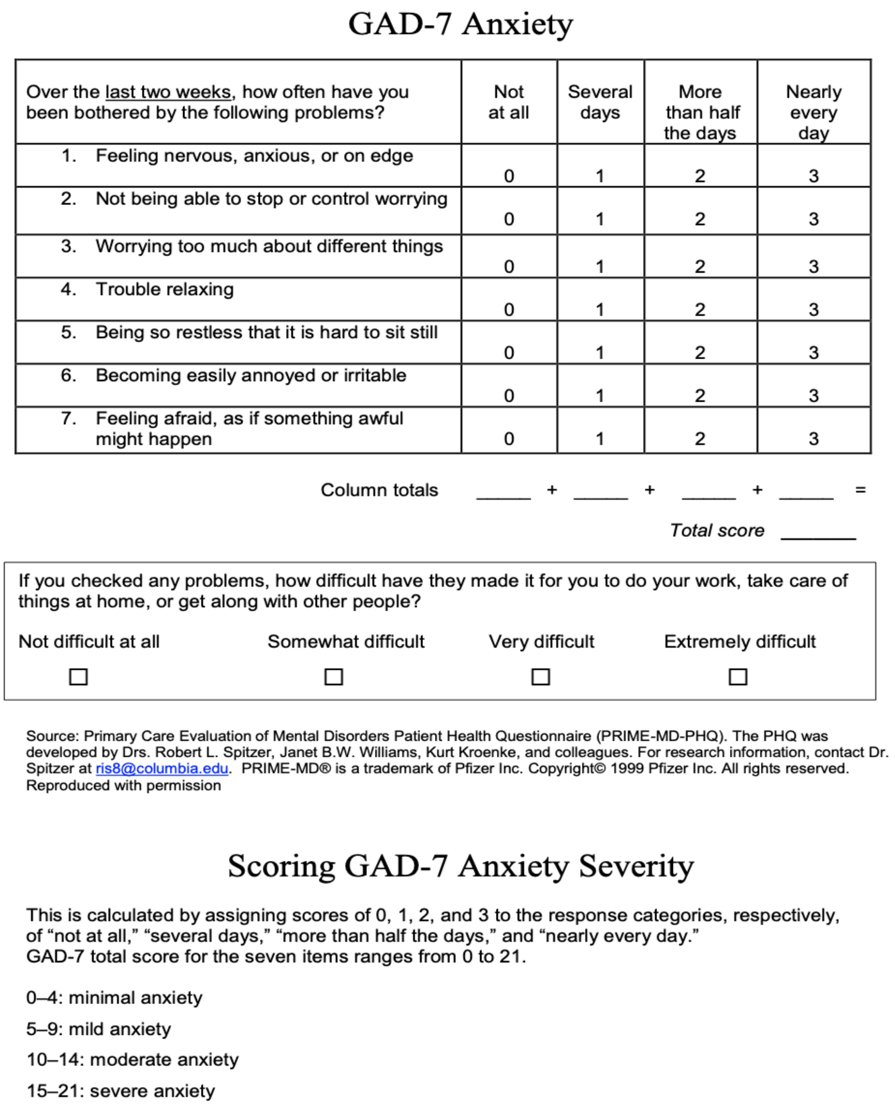
~ If you answered NEVER* to question 1 - Go to RELIGIOUS ACTIVITIES ~

5. How **satisfied** are you with your participation in intimacy?
   ☐ *Very satisfied* ☐ *Satisfied* ☐ *Somewhat satisfied* ☐ *Dissatisfied*
6. How much **help from another person** do you need to participate in intimacy?
   ☐ *A great deal* ☐ *A moderate amount* ☐ *Just a little* ☐ *None*
7. How often do you use **accommodations, adaptations or special equipment** to participate in intimacy?
   ☐*All of the time* ☐*Most of the time* ☐*Some of the time* ☐*A little of the time* ☐*Never*

****

Appendix E

General Anxiety Disorder 7-Item (GAD-7) Screening



GAD-7 Anxiety

Over the last two weeks, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid, as if something awful might happen	0	1	2	3

Column totals _____ + _____ + _____ + _____ =

Total score _______

If you checked any problems, how difficult have they made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

Source: Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (PRIME-MD-PHQ). The PHQ was developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke, and colleagues. For research information, contact Dr. Spitzer at ris8@columbia.edu. PRIME-MD® is a trademark of Pfizer Inc. Copyright© 1999 Pfizer Inc. All rights reserved. Reproduced with permission

Scoring GAD-7 Anxiety Severity

This is calculated by assigning scores of 0, 1, 2, and 3 to the response categories, respectively, of “not at all,” “several days,” “more than half the days,” and “nearly every day.”
GAD-7 total score for the seven items ranges from 0 to 21.

0–4: minimal anxiety

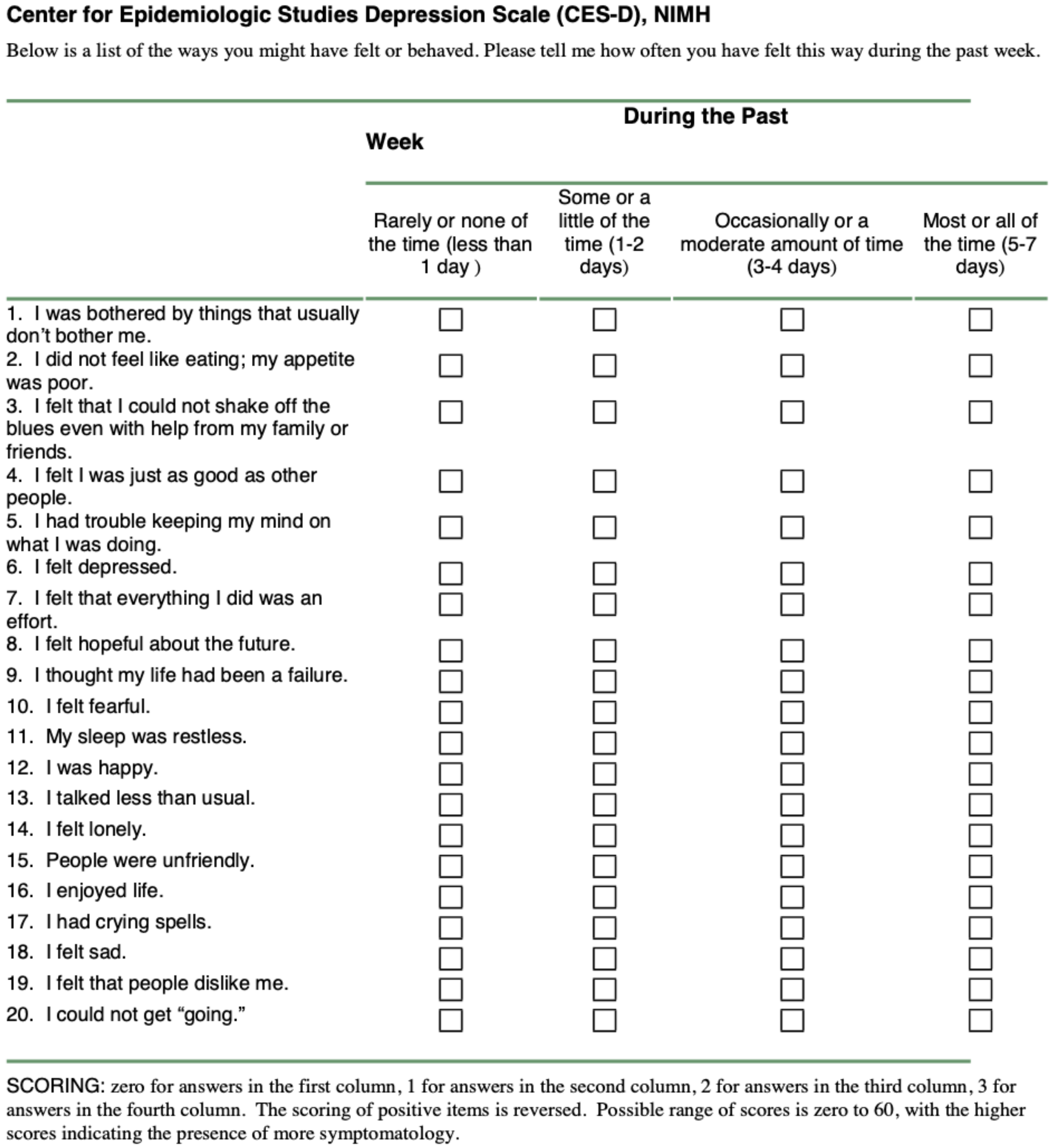
5–9: mild anxiety

10–14: moderate anxiety

15–21: severe anxiety

Appendix F

Center for Epidemiologic Studies Depression Scale (CES-D)



Center for Epidemiologic Studies Depression Scale (CES-D), NIMH

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

	During the Past Week			
	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	☐	☐	☐	☐
2. I did not feel like eating; my appetite was poor.	☐	☐	☐	☐
3. I felt that I could not shake off the blues even with help from my family or friends.	☐	☐	☐	☐
4. I felt I was just as good as other people.	☐	☐	☐	☐
5. I had trouble keeping my mind on what I was doing.	☐	☐	☐	☐
6. I felt depressed.	☐	☐	☐	☐
7. I felt that everything I did was an effort.	☐	☐	☐	☐
8. I felt hopeful about the future.	☐	☐	☐	☐
9. I thought my life had been a failure.	☐	☐	☐	☐
10. I felt fearful.	☐	☐	☐	☐
11. My sleep was restless.	☐	☐	☐	☐
12. I was happy.	☐	☐	☐	☐
13. I talked less than usual.	☐	☐	☐	☐
14. I felt lonely.	☐	☐	☐	☐
15. People were unfriendly.	☐	☐	☐	☐
16. I enjoyed life.	☐	☐	☐	☐
17. I had crying spells.	☐	☐	☐	☐
18. I felt sad.	☐	☐	☐	☐
19. I felt that people dislike me.	☐	☐	☐	☐
20. I could not get "going."	☐	☐	☐	☐

SCORING: zero for answers in the first column, 1 for answers in the second column, 2 for answers in the third column, 3 for answers in the fourth column. The scoring of positive items is reversed. Possible range of scores is zero to 60, with the higher scores indicating the presence of more symptomatology.