

Enhancing Motivation through Leisure Activities in Schizophrenia: A thematic analysis

Nur Ain Zainal Kharib^{1,2}, Akehsan Dahlan², Syamsul Anwar Sultan Ibrahim², Andriani Pratiwi³

¹ Klinik Kesihatan Kuala Kangsar ,2, Lorong Basong 6, Kampung Basong, 33000 Kuala Kangsar, Perak, Malaysia,

² Centre for Occupational Therapy Studies, Faculty of Health Sciences, Universiti Teknologi MARA (UiTM), Puncak Alam Campus, Selangor, Malaysia,

³ Rumah Sakit Universitas Indonesia (RSUI), Bahder Djohan, Pondok Cina, Kecamatan Beji, Kota Depok, Jawa Barat 16424, Indonesia

ainzk_otkkm@yahoo.com, akehsan@uitm.edu.my, syamsul2893@uitm.edu.my, andrianisukamto2509@gmail.com
Tel: 0199894091

Abstract

Motivation is vital for recovery in schizophrenia, influencing treatment engagement and outcomes. Schizophrenia disrupts motivation, requiring an integrated approach to improve care. Understanding leisure activity patterns, including benefits and barriers, offers insights to enhance participation and well-being. This study examines factors influencing motivation in individuals with schizophrenia (SCZ), focusing on leisure activity patterns and the role of healthcare professionals. The study identified key themes: activity type, time, frequency, barriers, benefits, and motivation factors. Barriers like inadequate facilities and staff issues hindered participation, emphasizing the need for tailored interventions.

Keywords: Motivation; Schizophrenia; Leisure; Occupational Therapy

eISSN: 2398-4287 © 2025. The Authors. Published for AMER by e-International Publishing House, Ltd., UK. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers). DOI: <https://doi.org/10.21834/e-bpj.v10i31.6585>

1.0 Introduction

Enhancing motivation through leisure participation is crucial for individuals with schizophrenia, as it significantly impacts their recovery and quality of life (Jochems et al., 2014). Schizophrenia often reduces motivation, leading to poor treatment adherence and less favorable outcomes. Leisure activities provide structure, purpose, and enjoyment, which can help improve engagement and well-being. Understanding patterns of leisure participation such as activity frequency, type, benefits, and barriers is essential for developing strategies to enhance motivation (Arnautovska et al., 2022). Viewing motivation as adaptable rather than fixed is critical to avoid self-blame and improve outcomes (Maclean et al., 2011).

2.0 Literature Review

eISSN: 2398-4287 © 2025. The Authors. Published for AMER by e-International Publishing House, Ltd., UK. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>). Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers). DOI: <https://doi.org/10.21834/e-bpj.v10i31.6585>

Leisure activities inherently align with personal interests and desires, which makes them intrinsically rewarding (Deci & Ryan, 2000). Leisure activities reduce stress and improve emotional well-being (Gould & Carson, 2008). Participation in leisure activities offers opportunities to develop new skills, fostering a sense of competence and self-efficacy (Bandura, 1997). Leisure activities often involve voluntary participation, promoting a sense of autonomy. According to Self-Determination Theory, autonomy is a key driver of motivation (Deci & Ryan, 2000). Physical leisure activities such as running or dancing release endorphins, which improve mood and energy levels (Craft & Perna, 2004). Activities like solving puzzles or playing games stimulate cognitive function and improve memory. This mental refreshment supports enhanced decision-making and long-term motivation (Colcombe & Kramer, 2003). In Institution, current practices for schizophrenia patients may lack the integration of structured leisure activities that enhance emotional, cognitive, and physical well-being, highlighting the need for research to explore the impact of tailored leisure interventions on patients' competence, autonomy, mood, and long-term motivation (Deci & Ryan, 2000; Gould & Carson, 2008; Bandura, 1997; Craft & Perna, 2004; Colcombe & Kramer, 2003).

3.0 Methodology

The study's objectives were achieved using a qualitative design. Researchers using this approach often seek to establish a phenomenon's meaning from the participants' perspectives (Creswell, 2009).

3.1 Participants and Research Setting

The purposive sampling method was used to select participants based on their relevance to the research topic and their ability to provide rich, detailed insights (Starks & Trinidad, 2007). Participants were chosen for their experiences and characteristics, as outlined in Table 1. In qualitative research, the sample size is typically smaller than in quantitative studies, as the goal is not to generalize to a larger population or test hypotheses (Dworkin, 2012). A smaller sample size allows for a deeper, more focused understanding of the topic. Data collection continued until saturation was reached, meaning no new themes were emerging from the data (Francis et al., 2010; Busetto et al., 2020). To ensure reliability, inter-coder reliability was employed, where multiple researchers independently coded the data and compared their findings to ensure consistency in theme identification. Additionally, data triangulation was used by integrating multiple data sources, such as interviews and observations, to validate the identified themes and enhance the overall credibility of the study.

Table 1. Inclusion and exclusion criteria

Sample	Inclusion criteria	Exclusion Criteria
Occupational Therapist (OT)	<ul style="list-style-type: none"> OT in Malaysia who have been in service for at least two years. Currently working with psychiatric adult patients Able to speak and understand the Malay language 	<ul style="list-style-type: none"> OTs who are not registered yet OT work in child psychiatric OT work in other areas
Health Provider (HP)	<ul style="list-style-type: none"> HP in Malaysia who have worked with psychiatrists for at least two years Currently working with psychiatric adult patients Able to speak and understand the Malay language 	<ul style="list-style-type: none"> HP, who has no experience in psychiatric HP who are not working directly with SCZ (Pharmacist, radiology, dietitian, etc.)
Schizophrenia Patients (SCZ)	<ul style="list-style-type: none"> SCZ in a mental health institution SCZ stay at an institution for at least 1 year Stable and on medication No relapse history for at least 3 months Able to speak and understand the Malay language 	<ul style="list-style-type: none"> SCZ in daycare Outpatient Hospitalized less than one year

This study was conducted across Peninsular Malaysia. The sample of OT and HP was collected from public hospitals. The sample for SCZ representatives was taken from Hospital Bahagia Tanjung Rambutan (HBUK), the largest psychiatric institution in Malaysia, with 78 yards and 1,800 beds (HBUK Annual Report, 2020).

3.2 Data Collection

The researcher conducted semi-structured face-to-face interviews with a total of fifteen participants. Five OT, five SCZ and five HP. Each interview took around 30 to 45 minutes for each participant. The researcher acted as a listener and asked participants to provide accounts of their experiences with the phenomenon. Probing questions were asked to encourage participants to elaborate on the details to achieve clarity and stay close to the lived experience (Starks & Trinidad, 2007). The questions for the interview guide were designed explicitly for this study; Malay versions are available to suit the participants' communication preferences.

2.3 Data Analysis

NVivo software was used to analyze the data in this study. Interviews were recorded, transcribed, and then analyzed using thematic analysis, which identifies patterns or themes in the data (Clarke & Braun, 2017). The analysis followed six steps to identify key themes (Braun & Clarke, 2006), and the themes and quotes were translated into English. Several methods were used to ensure the findings were trustworthy. Member checking involved sending interview transcripts to participants for feedback to ensure accuracy (Korstjens &

Moser, 2018). Investigator triangulation was also used, where multiple researchers analyzed the data together to ensure the findings were reliable (Korstjens & Moser, 2018; Kaminski & Pitney, 2004).

4.0 Findings

Fifteen participants contributed to this study's findings. Five are OT, five are HP, and five are SCZ. The findings revealed six main themes: "Type of activity," "duration," "frequency," "barriers," "benefits," and "factors influencing motivation."

Table 2. Main themes and sub-themes emerged from the findings of this study.

Main theme	Sub-Themes
Type of Activity	a) Active activity b) Passive activity
Duration	a) Half day b) A whole day c) Scheduled d) Flexible
Frequency	a) Everyday b) Special Occasion c) Twice a week d) Several times a week
Barriers	a) Behaviour b) Staff c) Facilities d) Symptoms e) Types of activities
Practice Benefits	a) Cognitive b) Social c) Psychological d) Self-Esteem e) Physical
Factors influencing motivation	a) Autonomy and choice b) Personal interest and relevance c) Positive reinforcement d) Meaningful Activity e) Feedback and Open Communication f) Supportive Environment g) Variety and Novelty h) Social interaction and support

4.1. Main Theme1: Type of activity

The type of activity focuses on exploring various activities undertaken by psychiatric patients in institutional settings.

4.1.1 Active activity

The study highlighted the importance of physical activities for people with schizophrenia. OT1 mentioned "morning walks, exercise, and dancing." OT5 talked about low-intensity activities like "strolling around the hospital." Gardening was also popular, with OT3 saying, "There are physical activities like gardening." OT4 added activities like "cognitive games such as carrom and checkers." Outings, like trips to Cameron Highlands or Penang Hill, were enjoyed by many. HP5 mentioned, "Bowling is a favourite, group exercises, like aerobics, help patients socialize and reduce isolation".

4.1.2 Passive activity

In addition to active activities, passive leisure options are available for patients who prefer less physically demanding engagement. As OT5 mentioned, "Some just come in and watch TV," and OT4 added, "Some listen to the radio or watch TV, depending on what they request." These activities provide a relaxed environment, particularly beneficial for patients experiencing fatigue or who find active participation overwhelming.

4.2 Main Theme 2: Duration

Time is a continuous, measurable concept used to quantify the progression of events and experiences.

4.2.1 Half Day

OT2 mentioned, "When they come in, they usually stay with us for half a day," highlighting that certain sessions require more extended participation. These half-day activities often include a variety of engagements, providing immersive experiences. OT5 added, "Sometimes the whole morning is filled with activities," reflecting a more packed schedule on specific days.

4.2.2 A whole day

In some cases, outings or special events may last the entire day. OT2 mentioned, "If we go for an outing, it lasts the whole day, sometimes even until night, but this is not frequent." These full-day outings give patients a break from their usual routine, allowing them to explore new environments, enjoy nature, and participate in social activities.

4.2.3 Scheduled

Healthcare providers shared that leisure activities for patients mostly happen in the late morning and afternoon. HP2 said, "Activities are from 11 AM to 12 PM for about an hour." HP3 added, "Activities are from 11 AM, then after a break, again at 2 PM." HP4 said, "Activities are after returning from the garden, around 10 AM." HP5 noted that morning activities help set a purposeful tone for the day.

4.2.4 Flexible

Patients reported engaging in leisure activities for approximately two hours at a time, often in a flexible manner. One patient, PT2, stated, "We usually have activities with the OT from around 9 AM to 11 AM," while another, PT5, added, "Sometimes, we have afternoon activities from around 2 PM to 4 PM." This flexible timing allows patients to structure their day while also accommodating other responsibilities or needs.

4.3 Main Theme 3: Frequency

Frequency is the number of occurrences of an event within a specified time.

4.3.1 Everyday

Some patients showed a strong commitment to engaging in daily activities, relying on them as an important part of their lives. For example, PT4 said, "I come here every day to participate in activities." PT5 echoed this by stating, "I come here every day except when the OT is off." These statements emphasize how regular participation in leisure activities can improve a patient's quality of life by providing structure, social interaction, and therapeutic benefits.

4.3.2 Special Occasion

A key finding of the study was that special occasions played an important role in the patient's schedules. As OT1 said, "There are also special activities held once a month or once a year, such as celebrations for Hari Raya, Maulid Nabi, Chinese New Year, or Deepavali." These events, based on cultural and religious traditions, happen less often but are important highlights in the patients' routines. They give patients a chance to join in festive and meaningful community activities.

4.3.3 Twice a week

Most patients participated in activities twice a week, which gave them structure and routine. PT1 said, "Usually, we join activities twice a week, sometimes on Monday and Wednesday, and sometimes on Tuesday and Friday for maybe 2-3 hours," PT2 added, "I usually come here on Mondays and Wednesdays," and PT3 mentioned, "It's about twice a week, if I'm motivated." These comments show that attending activities twice a week helps patients feel more connected and gives them a predictable routine.

4.3.4 Several times a week

OT2 said, "Each session lasts 1-2 hours, for several times a week" OT3 added, "Sessions depend on the treatment plan and progress and need several times a week." OT4 mentioned, "Activities last 30 minutes to 1.5 hours for several times per week".

4.4 Main Theme 4: Barriers

Barriers are obstacles or challenges that hinder the progress or achievement of goals.

4.4.1 Behavior

Getting patients to join activities is a big challenge for occupational therapists (OTs). OT1 said, "We sometimes need to offer rewards like food or money to get them involved." OT2 added, "The same patients join, others need reminders." OT3 and OT5 noted that older or less active patients often feel tired or unmotivated. OT5 said, "Convincing unwilling patients is tiring." Patients often don't want to join. HP3 said, "They need to be urged." HP2 said, "They are lazy." Patients often need to be more active to join activities. PT1 said, "We want to nap." PT2 said, "I'll join in the morning, but not in the afternoon." PT3 and PT4 mentioned feeling lazy and preferring other activities. This shows that laziness and low motivation stop patients from joining.

4.4.2 staff

More staff is needed to improve therapy sessions. OT1 said, "We need enough staff to supervise patients, but there are often not enough." OT4 agreed, saying, "There aren't enough staff on the ward." OT1 added, "Staff need to be involved. If they're not, patients may not enjoy the sessions." Another issue is that staff may only sometimes understand patients' needs. HP1 said, "Staff need to be creative and understand what the patient wants." When staff need to understand the patients fully, activities can be more enjoyable and productive, leading to less participation.

4.4.3 Facilities

OT5 said the equipment is "poorly maintained and not enough." OT3 said, "We have equipment, but it's not enough for all patients." This makes it hard to offer different activities. HP5 said, "Some things are missing, like a guitar for a patient who likes to play." HP4 said, "We have space, but it's not well-maintained." Poor facilities make it harder for patients to enjoy activities. Facilities also affect if patients want to join activities. PT3, who likes playing guitar, said, "There are no instruments, and I feel disappointed." PT5 also wanted a gym, saying, "I'd love a gym, but there's not enough equipment." Good facilities make a big difference in how much patients enjoy and take part in activities.

4.4.4 Symptoms

HP5 said, "Sometimes they still experience hallucinations," which can stop patients from joining. HP4 talked about worries over aggressive behaviour, saying, "I'm most worried if they sometimes like to fight, quite aggressively." This makes planning activities harder because symptoms can change quickly. HP3 added, "Some get angry suddenly," showing how emotions can change fast. These symptoms make activities difficult, so staff must watch and adjust for patients' moods.

4.4.5 Types of Activities

A challenge is that activities sometimes match patients' interests or abilities. PT1 said, "Sometimes the activity requires a lot of walking, like going around the field, and I'm not interested, but I'm okay if it's cooking." PT2 said, "I don't know how to play chess or carrom, so I just sit and watch." PT3 mentioned, "Sometimes I feel forced to join, even when I'm not interested." PT4 said, "I'll join if it's something like drawing or coloring, but I don't like exercise." PT5 said, "The OT repeats the same activities, and it gets boring. Outings and cooking are fun, though." These comments show that a variety of activities can help keep patients engaged.

4.5 Main Theme 5: Benefits

Benefits are the positive outcomes or advantages gained from the activity.

4.5.1 Cognitive

Activities help improve thinking and memory. OT1 said, "These activities help with memory, both short-term and long-term." OT4 and OT5 said games like carrom and chess improve brain skills. HP3 explained, "Leisure activities help the mind stay sharp and give a sense of purpose." HP4 agreed, saying, "These activities reduce mental strain and keep the mind healthy." Patients shared that activities help their thinking, too. PT2 said, "This activity helps improve my memory." PT5 said, "Exercise keeps my brain active." PT3 added, "Games like checkers and bingo help strengthen the mind." These comments show that activities benefit the brain.

4.5.2 Social

OT1 mentioned, "Group activities help patients improve their social skills. OT3 added, "Group activities are good for improving communication and interaction skills." These activities help patients connect with others and feel included. HP3 also stated, "Leisure activities help mental well-being and social interaction. "Group activities help reduce isolation, build friendships, and create a sense of community". Patients also shared how group activities helped them connect. PT1 said, "Doing group activities like cooking helps make new friends." PT3 agreed, saying, "My favourite is cooking together; it is never lonely in a group." These activities helped reduce loneliness and make them feel part of a community.

4.5.3 Psychological

HP3 pointed out, "Give them a sense of relaxation and purpose." HP2 explained that these activities help patients manage stress by "providing them with tools to manage stress and improve their quality of life." These activities not only relax patients but also help them cope with stress and improve their emotional health over time.

4.5.4 Self-Esteem

Engaging in therapeutic activities can improve patients' self-esteem. OT5 explains that "Self-esteem is boosted when patients are able to carry out activities, they are skilled at." OT3 adds, "They feel more confident when they get to be the leader of a group."

4.5.5 Physical

Therapeutic activities provide many physical benefits. OT1 says, "Activities like exercise help keep patients physically active." OT2 adds, "Morning walks help patients stay healthier and more energetic." OT4 points out, "Aerobics and gardening strengthen muscles." PT3 said, "Exercising made my legs stronger." PT5 mentioned, "Morning walks make me feel more energetic." Daily exercise boosts energy and helps patients feel more alert. PT1 said, "Walking is good for bones and muscles". PT2 said, "Exercise with OT has made me stronger," showing that supervised exercise is safer and more effective.

4.6 Main Theme 6: Factor Influencing Motivation

4.6.1 Autonomy and Choice

OT1 says, "Patients are more motivated if they can lead or choose when to do activities." Giving patients control over activities makes them feel more responsible and motivated. OT4 adds, "They are more motivated if they know the activity well or are better at it than others." Patients feel confident and motivated when they are skilled. Patients also share how choice helps. PT1 says, "I'll do an activity

if I want to, not if I'm forced." PT2 says, "I enjoy cooking and being the leader makes it fun." PT3 says, "I choose my activities, like playing carom or watching TV." PT4 says, "I wanted to play music, but no one asked me." This shows that allowing patients to choose increases motivation and satisfaction.

4.6.2 Personal Interest and Relevance

When activities match patient's preferences or daily life, they are more motivated. OT1 says, "If patients enjoy the activity, they are more likely to participate." OT2 adds, "We need to explain the benefits and adjust activities to fit their abilities." HP1 emphasizes, "Activities must match the patient's interests." HP2 says, "If it's something they like, like karaoke, it's easier for them to join." HP3 adds, "They'll join if the activity suits their interests." HP5 says, "You need to ask what they like."

4.6.3 Positive Reinforcement

Positive reinforcement encourages patients to join activities by offering rewards. OT3 says, "Rewards like food, treats, or money make patients more likely to join." OT4 adds, "We give candies or sweets to motivate them." OT5 mentions, "Singing competitions with prizes excite patients." HP1 says, "In cooking activities, patients enjoy eating what they make." HP2 adds, "We bring a small feast for larger activities." HP3 mentions, "Rewards can be money or snacks." HP5 says, "We spend extra money on rewards like food or cash." Patients agree that rewards help. PT1 says, "Food makes it fun." PT2 says, "Once a month, there's food". PT5 says, "After the walk, we get tea." Rewards like food, money, or fun activities help encourage participation.

4.6.4 Meaningful Activity

Meaningful activities align with a patient's personal goals or values, making them more likely to engage and progress. OT2 says, "Some patients will only join activities they feel are important for them. Regular fun activities may be hard to motivate them for, but if the activity has personal meaning, they are more likely to participate." This highlights that when therapy includes activities that matter to the patient, they are more motivated to participate.

4.6.5 Feedback and Open Communication

Communication fosters collaboration, making patients feel heard and valued. OT4 says, "After each activity, we should ask for their feedback and take it seriously." OT5 adds, "If we talk to them after the activity about any issues they faced, we see that the patient becomes more motivated." This shows that discussing challenges can increase motivation.

4.6.6 Supportive Environment

HP2 says, "Some patients want to play the guitar, but there isn't one available, and the staff don't try to meet their interests." This shows that when patients' needs are not met, they may lose interest in therapy. HP4 adds, "Staff should support patients in both medical care and daily life needs." This means patients need care that includes both physical and emotional support. HP5 says, "Support should come from staff, peers, and family." Having support from all these people helps patients feel safe and motivated.

4.6.7 Variety and Novelty

Offering different activities can help keep patients engaged and motivated. HP1 says, "Varied activities make patients happier and stop them from getting bored." Changing activities keeps things fresh and interesting for patients. HP2 adds, "Using new things like a video game makes patients more excited to join in." PT3 says, "Activities should change often." Changing activities regularly keeps things from becoming repetitive.

4.6.8 Social Interaction and Support

Social interaction and peer support play a key role in motivating patients during therapy. HP4 says, "Activities in a group setting allow them to socialize with one another," showing that interaction with others helps patients feel more connected and engaged. HP5 adds, "Group activities allow them to support each other," making the experience more enjoyable. HP1 highlights, "The social element is an important factor in boosting patient morale," as socializing lifts patients' spirits and strengthens their commitment to therapy.

5.0 Discussion

This study identified six key factors influencing motivation in schizophrenia patients: type of activity, duration, frequency, barriers, benefits, and motivational factors. Consistent with prior research, engaging and personalized activities (Walkington & Bernacki, 2014) and moderate, consistent participation (Gagnano et al., 2020; Farlie et al., 2019) enhance motivation. However, overly structured schedules (Lupu & Rokka, 2022) or excessive activity (Lazarus, 2020) may overwhelm patients, contrasting with Filgona et al. (2020), who emphasize frequent activities for behavior reinforcement. Barriers like low self-esteem (Orth et al., 2022), cognitive impairments (Xu et al., 2021), and resource limitations (Maryani et al., 2021) hinder participation, but personalized strategies (Alamri et al., 2020) and peer support (Shalaby & Agyapong, 2020) mitigate these challenges. Benefits, including improved health (Shalaby & Agyapong, 2020) and self-worth (Monteiro et al., 2021), highlight the value of leisure participation. While stage-specific interventions (Huang & Yamamoto, 2013) are recommended, further research is needed to explore changes in motivation across illness stages. Institutions should prioritize flexible, tailored approaches to improve outcomes. The research suggests exploring stage-specific interventions, expanding personalized strategies, and enhancing peer support programs for broader mental health populations. It also advocates for

flexible, tailored approaches in institutions and further investigation into environmental factors that influence patient engagement and therapeutic outcomes.

6.0 Conclusion & Recommendations

This study has several strengths, including its holistic approach, practical relevance, and in-depth qualitative insights into motivation and barriers in schizophrenia recovery. It provides actionable recommendations for leisure activity interventions. However, limitations include a small sample size, reliance on subjective data, focus on institutional settings, and short-term evaluation. Key gaps involve the lack of quantitative analysis, minimal exploration of cultural differences, absence of longitudinal studies, and limited solutions for implementation challenges like staff training and patient engagement. To enhance effectiveness, increase sample diversity, use mixed methods, conduct long-term studies, and ensure real-world relevance through community settings. Staff training, peer support, and securing funding are key for sustainability.

Acknowledgement

The authors want to acknowledge the Faculty of Health Science, Universiti Teknologi MARA (UiTM), and Research Management Institute (RMI). The authors also wish to thank all participants who have participated in this research project.

Paper Contribution to Related Field of Study

This paper offers valuable ideas for improving motivation in schizophrenia patients. The findings can help psychiatric staff create better interventions. By using these suggestions, mental health professionals can increase patient motivation, improve treatment adherence, and support the well-being of people with schizophrenia.

References

- Arnaudovska, U., Kesby, J. P., Korman, N., Rebar, A. L., Chapman, J., Warren, N., ... & Siskind, D. (2022). Biopsychology of physical activity in people with schizophrenia: an integrative perspective on barriers and intervention strategies. *Neuropsychiatric Disease and Treatment*, 2917-2926.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W.H. Freeman.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.
- Chen, Y., Chen, T., Wang, Y., & Jiang, X. (2024). The effect of cognitive leisure activities on cognitive reasoning among elderly individuals: The mediating role of need for cognition. *Current Psychology*. Springer.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2), 310–357.
- Colcombe, S., & Kramer, A. F. (2003). Fitness effects on the cognitive function of older adults. *Psychological Science*, 14(2), 125–130.
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268.
- Gorfine, H., Jalali, A., Bell, J., & Conron, S. (2024). Reeling in joy: Untangling the link between satisfaction and motivation in recreational fishing. *Authorea*.
- Gould, D., & Carson, S. (2008). Life skills development through sport: Current status and future directions. *International Review of Sport and Exercise Psychology*, 1(1), 58–78.
- Jochems, E. C., Duivenvoorden, H. J., van Dam, A., van der Feltz-Cornelis, C. M., & Mulder, C. L. (2017). Motivation, treatment engagement and psychosocial outcomes in outpatients with severe mental illness: a test of Self-Determination theory. *International journal of methods in psychiatric research*, 26(3), e1537.
- McLean, S. L., Grayson, B., Idris, N. F., Lesage, A. S., Pemberton, D. J., Mackie, C., & Neill, J. C. (2011). Activation of $\alpha 7$ nicotinic receptors improves phencyclidine-induced deficits in cognitive tasks in rats: implications for therapy of cognitive dysfunction in schizophrenia. *European Neuropsychopharmacology*, 21(4), 333-343.